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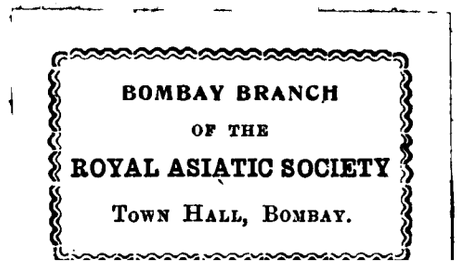

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REPORT

OF THE

LENGTH OF THE PENDULUM

AT THE

EQUATOR,

BY

John Goldingham, Esq. F. R. S.

FROM EXPERIMENTS AND OBSERVATIONS

MADE ON

AN EXPEDITION

53325
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FITTED OUT UNDER HIS DIRECTION

FROM THE

OBSERVATORY AT MADRAS;

BY ORDER

OF THE

MADRAS GOVERNMENT,

IN THE YEAR 1821.

TOGETHER WITH A DEDUCTION

OF THE

FIGURE OF THE EARTH,

BY COMBINING

The EQUATOR, MADRAS, *and* LONDON,

EXPERIMENTS.

ALSO,

THE GEOGRAPHICAL SITUATION

OF

DIFFERENT PLACES

SEEN ON THE EXPEDITION.

WITH

PLANS AND VIEWS.

53252

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REPORT

OF THE

LENGTH OF THE PENDULUM

AT THE

EQUATOR,

By JOHN GOLDINGHAM, Esq. F. R. S.

IN order to give the greatest possible value to the Experiments, which have lately been completed for ascertaining the Length of the Pendulum, and thence the Figure of the Earth; it was essential to have the Length of the Pendulum at the Equator, deduced from Experiments made with the same care, and with the same accurate description of Apparatus, as had been used in other parts of the World.

With a view to this Enquiry, and to make the Pendulum Apparatus, which I had received from England as useful as possible in this quarter of the Globe, I turned my attention towards discovering a good position upon the Equator, where to have the requisite Experiments made; being certain at the same time, that the Government of Madras,* whose aid I proposed to ask, would order every preparation to be completed, and every thing to be done, calculated to ensure the success of this interesting Enquiry: It appeared to me that some one of the Islands off the Western Coast of Sumatra, would furnish a good position, on which to make the necessary Experiments; and though personally unknown to *Sir Stamford Raffles*, the present Lieutenant Governor of Bencoolen, I felt no hesitation in addressing him upon the subject of affording us assistance.

The reply of *Sir S. Raffles* was such as I had anticipated—it was dated the 5th of September 1821; and the subjoined are Extracts from it.

" I have been much gratified by the receipt of your communication, and lose no time in assuring you of my most zealous co-operation and assistance. There are several small Islands to the Southward of Nattal, many parts of which must lie on the Equator, and I think you may have a choice of situation.

" I lament to say that our geographical knowledge, even of the Coast, is most defective—with the exception of Acheen Head, and Bencoolen, and perhaps Flat

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* At the time the Expedition was proposed and ordered, the Government consisted of

The Honorable Major General Sir Thomas Munro, K. C B. Governor.

His Excellency
General Sir Alexander Campbell, Bart. & K C. B.
Commander in Chief.
The Honorable George Stratton, Esq.
and
The Honorable William Thackeray, Esq.
} *Members of the Council.*

Edward Wood, Esq. being Chief Secretary.

Point to the South, neither the Latitude or Longitude of any place along the whole line of Coast is laid down correctly; I am endeavouring to supply the deficiency, but I am in great want of scientific assistance and get on but slowly—The Poggy Islands and Pulo Nias appear to be laid down not less than 40 miles to the Westward of their true situation, and no two Charts agree in the longitude of the main Island to the Northward of Bencoolen—I mention this in order that your Observations may commence at Madras, and be brought on direct to Bencoolen.

" That the party should come to Bencoolen, in the first instance, is indispensable also on many accounts; it will enable me personally to communicate with your Assistant, to give him such advice and information as may be necessary, and to supply the stores, necessaries and personal guard that may be required—The season for going from Bencoolen to the Northward will commence in April, and the sooner the Party arrive here after January the better; it is to be wished they should be at their station in March, in which case, should the weather prove unfavourable, and their object not to be otherwise accomplished, they will have the September change before them, and the command of both seasons.

" We have a regular station at Nattal and Ayer Bonghey, and also on Pulo Panjong which lies directly off the latter, and would seem to be on the Equator—Mount Ophir is stated by Mr. Nairne to be 5 miles to the North of the Line, but in the maps it is as much to the South.

" I would recommend your sending a *double* establishment of practical men, to supply casualties by sickness or otherwise, and I think your Party should be as complete in every respect as practicable.

" They had better bring Tents (light ones of course), and a few Pioneers with their Axes would be found useful.

" A Watchmaker, Carpenter and Brazier can be furnished from Bencoolen—that is to say of the ordinary class.

" I should be very happy to find on the arrival of your Assistant, that we can mutually agree upon some general plan, which shall include not only the experiments on the Pendulum, but the general geography of the Island, to which my attention has long been directed—at all events he will be under the necessity of taking Observations for laying down some positions with accuracy, and these will be so many points gained in geography.

" The Party should be most complete in Instruments—they must not rely on finding any, even the commonest, here."

Another Letter from *Sir Stamford Raffles* of the 17th of December following, expresses the same warm interest respecting the projected expedition, with the same promises of assistance.

Immediately upon the receipt of the first of these Letters, I waited upon *The Governor* Sir Thomas Munro, and stated the Object I had in view---mentioning at the same time, the promised assistance, and the information I had obtained, from *Sir Stamford Raffles:* As I had expected, Sir Thomas Munro was pleased to enter most fully into

the Objects of the Plan; and I immediately addressed a Public Letter to the Government upon the subject—of which the subjoined are Extracts.

"It is known to *The Honorable* THE GOVERNOR *in Council*, that some of the principal Governments in Europe, have lately employed eminent scientific men in determining the Length of the Pendulum, for establishing a standard measure, and for ascertaining the Figure of the Earth; and in this interesting enquiry, that *Great Britain* has stood in the foremost rank—sparing no expense that appeared in any, the remotest, degree necessary, for obtaining the most accurate results.

"In a former communication, I had the honor to state, that I had written to the Gentleman employed by the British Government to superintend the operations in England, who was a friend of mine, to procure for me, and send out, an Apparatus for measuring the Length of the Pendulum, similar to that used by himself; and that he had most readily done so; the use which has been made of this Apparatus here, is fully known to *The Honorable* THE GOVERNOR *in Council*.

"In order to compare and combine the Observations for the Length of the Pendulum taken in different Latitudes, in a manner to render such Observations of the greatest value, it would be most desirable to have accurate Observations taken at the Equator, and a very favourable opportunity for obtaining such Observations, now presents itself.

"A part of the Island of Sumatra, which is under the influence of *The Honorable Company's* Government, is crossed by the Equator, and offers a most eligible Station for these Operations; added to which, *Sir Stamford Raffles*, the Lieutenant Governor of Bencoolen is anxious, as he informs me, to afford his most "zealous co-operation and assistance."

"I therefore beg to submit for the consideration of *The Honorable* THE GOVERNOR *in Council*, that persons to be properly instructed in the use of the Pendulum Apparatus, and qualified to make all the necessary Observations, may be sent to Sumatra, under my direction, to collect, and transmit to the Observatory as collected, the valuable and interesting data, requisite for finding the Length of the Pendulum at the Equator; the more difficult part of the Calculations may be made, and the Conclusions drawn here by myself.

"Messrs. Peter Lawrence and John Robinson, who were brought up at the *Honorable Company's* Surveying School formerly under my superintendence, would be able, with some instruction, to perform this duty---the former was many years under Colonel Lambton, the Superintendent of the Grand Trigonometrical Operations carrying on in this part of the World; the latter was originally qualified to act as Assistant at the Observatory, and teacher at the Surveying School; but during my absence in England, he was detached to the Districts, and is now I understand employed in the Tank Department at Chittoor; but as another Surveyor is there, I have little doubt he can be spared for this Service, which may be considered only of a temporary nature.---The monthly Salary of these Assistants, might not exceed 175 Rupees ---A trusty and steady Conductor of Stores to look after the

Property, and a Sub-Conductor of the same character, under him, with a proportion of good Lascars, would be necessary; together with Tents—including one for an Observatory.

"The Pendulum Apparatus we have—a Clock can be spared for a time from the Observatory for this occasion—with one Chronometer, the loan of two other Chronometers may possibly be obtained, or two may be purchased—Sextants and Artificial Horizons may also be taken from the Observatory, with a Telescope and a Portable Transit Instrument: a Barometer and some smaller Articles must be purchased, and levelling and measuring Rods be made up—Also the loan of such Surveying Instruments as may be required can be obtained, from one or more of the public Offices, where such are in store. By this Arrangement the expense will be as limited as possible: and I have no doubt, that future and not inconsiderable expense will be saved, by the Geographical information, which will be collected during the Operations, and which being extremely required by *Sir T. S. Raffles*, the Assistants may be instructed to omit no opportunity of obtaining: points must necessarily be established, and that in the most accurate manner, from which those employed in the ordinary operations of Surveying, may at all times take a departure.—*Sir T. S. Raffles* in a communication to me, observes, "I lament to say that our geographical knowledge, even of the Coast, is most defective—with the exception of Acheen Head, and Bencoolen, and perhaps Flat point to the South, neither the Latitude or Longitude of any place along the whole line of Coast is laid down correctly; I am endeavouring to supply the deficiency, but I am in great want of scientific assistance and get on but slowly—The Poggy Islands and Pulo Nias appear to be laid down not less than 40 miles to the Westward of their true situation, and no two Charts agree in the longitude of the main Island to the Northward of Bencoolen—I mention this in order that your Observations may commence at Madras, and be brought on direct to Bencoolen." The sooner, *Sir S. Raffles* observes, the Party are at Bencoolen "after January the better"—and opportunities it is probable may occur for sending them on a Vessel bound to that place.

"Should *The Honorable* THE GOVERNOR *in Council* be pleased to direct these operations to be performed, I can prepare the Assistants for the execution of the Duty, and frame detailed Instructions for their guidance.—A List of the Articles required for the Expedition, can also be submitted for Approval."

This letter was dated the 6th of November 1821, and a most gratifying Reply was received to it on the 16th of the same month—of which the subjoined are Extracts.

"I am directed to acknowledge the receipt of your Letter of the 8th instant, and to state, that *The Honorable* THE GOVERNOR *in Council* fully sensible of the importance which is to be attached to the Observations you are desirous should be made at the Equator, will be happy to afford every possible assistance in the prosecution of Researches which are calculated to prove so eminently valuable to general Science.

"Instructions will accordingly be immediately issued for the two persons Messrs. John Robinson and P. Lawrence, whom you consider to be calculated to conduct the

desired Enquiry, to be placed under your superintendence, in order that they might receive that Instruction which it is your intention to give them, to ensure the correctness of the Observations, which they will be entrusted to make—Orders will also be given for the selection of a Conductor and Sub-Conductor, whose characters for steadiness, render them fit to take charge of the Property, and when you shall have stated the number of Lascars, and the extent and description of the establishment of Tents that it may be necessary to assign to the Party, directions will also be communicated for their being furnished with them.

" With respect to the number and nature of the Instruments and other Articles that it may be necessary to provide on the occasion, *The Honorable* THE GOVERNOR *in Council* will be prepared to sanction your Indent for all such as are to be procured from the Public Stores, and feeling confident that you will confine the expense to be incurred within as narrow limits as may be practicable, he will authorize any Expenditure which you may make in the provision of those which can only be supplied by purchase.

" The Marine Board will be instructed to report whenever an opportunity may offer for the departure of the Party for Bencoolen."

The Preparations were immediately commenced at the Observatory, and completed about the close of the year ; the additional Instruments were obtained, either from Offices where such were in store, or purchased; the difficulty and trouble in a Country like this, attendant upon fitting out an Expedition of this description, and in having delicate Instruments properly packed, may readily be imagined*—these difficulties however were successfully overcome : and the two Assistants, Messrs. Robinson and Lawrence, were instructed and practised in the Duty they had to perform. I expected that an Officer with a Guard, would have been ordered by *Sir Stamford Raffles* to go with the Party from Bencoolen, but it having been suggested to me, that it might be better to despatch an Officer from hence—and concurring in this suggestion—I addressed the Secretary to Government in the Public Department, upon the subject, under date the 28th of December, stating—

That it having been suggested to me, if an Officer were sent with the Party going to the Equator, it might be of service to him, and that difficulties might possibly occur, which persons, merely scientific, could not so readily overcome, I begged he would be pleased to submit for the consideration of *The Honorable* THE GOVRENOR *in Council*, whether it might not be desirable to have this addition to the Party.—That we had as much Science engaged I imagined as could be required; it was therefore not *essential* that any gentleman who might go, should have had a regular scientific education—a general knowledge of the object of the Expedition merely, with the habit of overcoming difficulties which occur on Service in the Field, and a power of command to keep all proceeding with it in due order, would be sufficient for the purpose."

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* The Correspondence, which this involved, and which was of some bulk, has been omitted, as tending unnecessarily to increase the length of the Report.

The Honorable THE GOVERNOR *in Council* was pleased to adopt this suggestion, and to appoint *Captain Crisp* of the Army of this Presidency for the Service—that Officer after he was appointed, also attending at the Observatory, to obtain information as to the mode of using the Pendulum Apparatus.

THE FOLLOWING

IS A LIST OF THE INSTRUMENTS AND ARTICLES

SENT WITH THE EXPEDITION.

1 Astronomical Clock, *Gridiron Pendulum.*

1 Pendulum of *Experiment,* with Frame for suspending it—Arc of Vibration and small Telescope.

2 Thermometers for Do.

3 Pocket Chronometers—viz. No. 391 and 397, by Arnold—and a Gold one, by Earnshaw.

3 Sextants—one with a Stand.

2 Artificial Horizons with Glass covers—Quicksilver for the same.

1 Large Telescope by Dollond with Stand—for Eclipses of the Satellites of Jupiter.

1 Portable Transit Instrument, with Circular Wooden Stand.

1 Theodolite and Stand.
1 Circumferentor and Stand.
1 Azimuth Compass.
} Quilted Wax Cloth Covers for these Instruments.

1 Hand Telescope, by Dollond.

1 Barometer.

1 Large Perambulator.

1 Brass Chain 100 feet.

1 Hygrometer.

2 Levelling Staves 10 feet each, with Vanes.

1 Plank for fixing the Clock, 6 feet 7 inches long, by 1 foot 4 inches broad and $2\frac{1}{2}$ inches thick—8 Plugs and Screws for fixing the same to the Pillar.

10 Circular Plugs for fixing the Frame for suspending the Pendulum of Experiment.

1 Triangular Stand for the Barometer.

1 Stand for the Arc for measuring the Vibrations.

1 Stand for the Small Telescope.

A Canvas Observatory—Camp Table, and Stools.

2 Magnifying Glasses.

1 Sett of (4) Stained Glasses.

1 Case of Mathematical Instruments.

1 Parallel Ruler.

1 Gunter's Scale.

1 Colour Box, Indian Ink and Brushes.

Nautical Almanacs for 1822 and 1823.

2 Madras Almanacs for 1823.

Book of Requisite Tables.

Norie's Nautical Tables.

Refined Oil for the Clock and Pendulum.

Bamboos and Flags for Signals.

Steps to mount to the Frame of the Pendulum.

Black Paper for the Ball of the Clock Pendulum—Hair Powder for Paste.

2 Chamois Leather Skins for cleaning the Glasses of the Instruments.

1 Office Tent,
2 Subalterns Tents,
2 Necessary Tents,
2 Baggage Tents,
1 Lascars Tent,
} With Storm Ropes, Pins, &c. complete.

1 Large Magazine Tarpaulin.

With Hatchets, Bill Hooks, Pickaxes, Plumb Lines, Rope and Line of different descriptions, Cleets, Nails, Screw Drivers, Drills, and sundry smaller Tools and Articles.

Stationary—an ample supply, including Blank Books.

10 Dozen of Wax Candles.

40 Measures of Oil—Candlesticks, Lamps and Lanthorns.

Also a proper supply of *Medicines*—and Directions for using the same.

These *Instruments* and *Articles* were carefully packed in 25 Cases—and arrived quite uninjured at the ultimate destination of the Expedition.

The following *Instructions*, approved by the Government, were furnished by me for the guidance of the Party. I was the more particular in these *Instructions*, as the Service was new to those going upon it, and to prevent as far as possible, any interruption, from a want of the requisite information.

INSTRUCTIONS.

"The primary object of the Expedition is to make the requisite Experiments and Observations for ascertaining *the Length of the Pendulum at the Equator*, to combine with Observations which have been made at Madras, and in other parts of the Earth: with this, other objects are not to be allowed to interfere; though opportunities will doubtless occur on the passage to Bencoolen, and from that place to the Equator, and on the return voyage to Madras, for obtaining much valuable nautical information; and no such opportunities should be allowed to escape.

"The Party will first proceed to Bencoolen, where *Sir Stamford Raffles* has promised to furnish any additional Assistance that may be required—a Vessel to proceed to the Equator, a Guard, Materials (Bricks and Lime) and a Bricklayer or two to build a Pillar, to which to fix the Clock, two Carpenters, and Provisions, comprise the principal assistance wanted. A Watch Maker to put up the Clock, may be required—but it will be better, if possible, to do without one.

"On arriving at Bencoolen, Observations should be taken for the Time, for the purpose of obtaining the difference of Longitude between Madras and that Place; these Observations should be continued for the Rates of the Chronometers, and a fresh departure taken from Bencoolen for the Longitude of the Place where the Experiments with the Pendulum are to be made—Observations should also be taken for the Latitude of Bencoolen—the Variation of the Compass, and if possible, the rise and fall of the Tide, with the time of high water at the full and change.

"In selecting a Station at the Equator, care should be taken, that it be as far as possible out of the sphere of the attraction of Mountains, and close to the sea—a small healthy Island at a moderate distance from the main land, would be a most desirable place for a Station. According to the accompanying sketch No. 1, there is an Island (*Saka*) on the Equator—this however is a long way out, and unless there be a post on Po. Pinjin, it may be at an inconvenient distance from the Sumatra shore—some healthy Island may probably be met with nearer the Coast.

"Having found the Equator by Observation, the Pillar is to be erected upon it* (vide Plan and Elevation). The face should be perfectly flat and upright—and should front the opposite part of the horizon to that the Wind of the Season blows from—if it be the S. W. Monsoon, for example, the face of the Pillar should be to the N. E.—while

* The Pillar to be commenced as early as practicable, and to be kept from Rain by a Tarpaulin—the object being to have it as dry as possible before the Clock and Frame are put up. It is not to be plastered, as that would keep it wet a very long time—strong Cement that will soon set, to be made use of, if to be obtained—as little water as possible to be used in mixing the Chunam and laying the Bricks.

the Pillar is building, the Plugs of Wood for fixing the Frame, which is to support the Pendulum of Experiment, should be inserted, exactly in the proper places, as well as the Plugs for fixing the Plank to which the Clock is to be attached: small pieces of wood should also be placed in the projecting part of the Pillar on which the Clock, and the Stand for the Arc for measuring the Vibrations of the Pendulum of Experiment, are to rest; to those pieces of wood, is to be screwed, the Stand just mentioned.—When the Pillar shall have properly settled, and become sufficiently dry, the Canvas Observatory may be placed over it, the door fronting the face of the Pillar, and the face of the Pillar about two feet behind the ridge Pole; the whole of the Pillar to be nearer the left side of the Tent, than the right side (*Vide Plan*). The Plank should be properly secured and perpendicular to the horizon.—The Plank being firm, the Clock may be screwed to it, which should be done in the most secure manner.—The Pendulum to be kept every way, as at the Observatory, and the Works of the Clock the same; the Arc for measuring the Vibration, will be a guide in placing the Pendulum, the point of which, should stand 1 division to the right of 0, and 0,25 of an inch in front of the Arc: by having the face of the Pillar upright and flat in the first instance, the Plugs so placed in it, that the Plank shall also be upright and firm against the face of the Pillar, the Clock will be easily and firmly screwed in the position mentioned. The projecting part of the Pillar on which the bottom of the Clock Case stands, should be perfectly level. The Pendulum of the Clock is first to be put up, and then the Works.* If the Black Paper and Disc should have been rubbed off; the Ball of the Pendulum is to be covered again, and a fresh Disc put upon the Centre of the Ball. The Clock should have been going 24 hours at least, before you begin to ascertain its rate—get it to as small a rate as you can without losing too much time.

The Frame for supporting the Pendulum of Experiment may now be secured. At the Observatory I was obliged to let the back of the Frame $3\frac{1}{2}$ inches in the wall;—the surface of the Plugs having been let in beyond the surface of the Wall, exactly that quantity; but the Clock was then placed against the wall; here, there will be a plank, which is exactly $2\frac{1}{4}$ inches in thickness, so that the surface of the Plugs should be let in only $1\frac{1}{4}$ inch, and the Front of the Pillar, where the Frame is to be placed, cut away to that depth. Care should be taken that the Frame is put up at first so that the top of it shall be as nearly level as possible; and at such an height, that when the small Frame with the Agates is also put up, the point of the Pendulum shall just come to the divisions of the Arc for measuring the Vibrations; and also, that the middle of the black slip at the lower part of the Pendulum, shall be as nearly as possible opposite the centre of the Disc.

The large Frame being levelled† by the spirit levels, put up the smaller Frame

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* Minute written Instructions were also furnished for putting up the Works and Pendulum of the Clock—to make the Party independent of assistance in that part of the Operations.

† Lead is placed between the parts of this Frame, so that with the purchase of the Lever, it may be flattened, and the Frame thus brought into level; it should however be made as nearly level as possible by the Workmen when putting it up.

containing the Agates—let this be most accurately levelled; screw up the Ys, and put up the Pendulum of Experiment, with the knife edges in the Ys, having first wiped the knife edges with a piece of cloth, or flannel, saturated with fine oil—This should be done before the Observations are commenced, and after finishing them; the knife edges are always to rest in the Ys, when the Pendulum is not used, but to be let down on the Agates, when the Experiments are making.

The small Telescope is to be placed at such a distance from the Pendulum, that the sides of the black slip at the bottom of the Pendulum, shall just be embraced by the sides of the perpendicular opening in the diaphragm; Large Pickets with flat tops may be driven into the ground at the proper distance, and the bottom of the triangular stand supporting the Telescope be screwed to these—the Telescope being kept at the same height as it is in the Observatory—or a brick foundation may be laid with pickets let in: The Telescope must be slid horizontally, until the left edge of the diaphragm becomes a tangent to the edge of the Disc on the same side, and a mark must be made to shew the position of the Telescope to the left; move the Telescope to the right, until the other side of the diaphragm, is a tangent to the part of the Disc on the right, here make a mark also, bisect the distance of the two marks, and place the Telescope half way between.

The following is the mode of making the Experiments—The Barometer being up, and the Thermometer hung near the middle of the Pendulum; lower the knife edges gently upon the Agates; adjust the perpendicular sides of the diaphragm, most accurately to the edges of the of the black slip, by the screws on the brass part of the support, then bring the 0 on the Arc, to coincide exactly with the angular point of the Pendulum. With the forefinger of the right hand upon the edge of the black slip of the Pendulum, bring the point to about 1,3 upon the Arc for measuring the Vibrations, and on the left of 0; *an instant* before the Pendulum of the Clock comes to its greatest height on the same side, withdraw the finger horizontally; take the height of the Thermometer and Barometer, which register, look through the Telescope, an assistant counting the Clock, note the second and parts of a second, when the Disc is completely hid behind the black slip of the Pendulum—also the instant when it re-appears—let the exact time, minutes seconds and tenths, of both, be registered, and the mean taken. Immediately after the second Observation (the re-appearance of the edge of the Disc) take the Arc of Vibration very carefully, by seeing how much the Pendulum vibrates on each side of 0, which also register: In about 11 or 12 minutes, the Disc will again coincide with the Pendulum—the times of the same appearances as above, must be noted and registered; and thus proceed, until five mean coincidences are obtained, (*as in the Form*). The Thermometer being observed at the beginning, at the 3d and 5th coincidences, and the Barometer at the beginning and end of each set. The Pendulum should now be gently stopped, by putting the hands at the sides of the weight, and a new set of Experiments commenced as above: perhaps 8 sets, 4 in the morning and 4 in the afternoon may be taken in a day; the Names of the Observers to be noted; and each person's Observations to be kept distinct. The forenoon sets

being done, screw up the Ys. so that the knife edges may rest on them, lift the Pendulum gently up and wipe the knife edges with the oiled cloth or flannel, and place it again with great care in the Ys. covering the whole with a Cloth to keep off dust and damp; Before the Afternoon's Observations, wipe the knife edges, and lower them upon the Agates very carefully—should there not be light enough in the Observatory Tent, the top may be opened; but great care should be taken to exclude wind from the Pendulum during the time of making the Experiments, on this account the face of the Pillar and the opening are placed on the side opposite to the prevailing wind.

Three distinct sets of Observations, of 120 or 130 Observations in *each* set, should be taken if possible. The Frame with the Agates to be examined and levelled between each set, and the other points of adjustment also to be examined.

During the time of making the Experiments the rate of the Clock must be correctly ascertained, both by the Stars and the Sun—and all the Observations carefully registered. A small Pillar may be built for the Transit Instrument, sufficiently to the right in the Observatory, not to obstruct the view of the Pendulum through the Telescope, but so as to take advantage of the opening in the top of the Observatory, for taking the Transits.

Meridian Altitudes of the Sun, if not too high for the Artificial Horizon, and of Stars on each side of the Zenith, should be observed; the more numerous these Observations are the better—as a Result to the nearest second is required.

The Longitudes must be found by the Chronometers, and Eclipses of the Satellites of Jupiter.

The nearer the place of Observation is to the Sea the better; the height of the Pendulum above the Sea must be found by levelling—also the rise and fall of the Tide—The time of High Water on full and change; The Variation of the Compass, the Bearings and Distances of the different Mountains, their Extent and Elevation nearly, and if known, to note what they are composed of; also the Bearings and Distances of Islands, and parts of the Coast—and particularly the nature of the Soil, of the place on which the Experiments are made; whether Sandy or Mould, or Rocky, if either of the two former, whether to any Depth.

Every opportunity is to be taken, for finding the bearings and distances of places and points along the Coasts which may be in sight; with the difference of Latitude and difference of Longitude; also for obtaining Soundings, as well as the set of the Currents, as shewn by the Chronometers and Meridian Observations, to lay the Foundation for a Nautical Survey, and for the improvement of Nautical Science; the Variation of the Compass should also be found as often as possible; the Log Line should be accurately marked, so as to give correct distances for Bases, and for finding the strength of the Currents.

The details of all the Observations, Experiments and Results to be sent to the Observatory, to *Mr. Goldingham* the Astronomer, by every opportunity.

Journals noting every Circumstance that may be thought useful or interesting, should be kept, both Robinson and Lawrence, may each also be directed to keep a Journal."

" *Memorandum of the Points to be attended to.*—The Frame with the Agates to be accurately levelled.

In taking the Pendulum of Experiment out of the Case, the greatest care should be observed not to bend it;—The knife edges to be wiped with an oiled cloth at the beginning and at the end of the Experiments:—The knife edges always to rest in the Ys. when the Pendulum is not in use, but to be let down on the Agates previously to making the Observations.

The Point of the Pendulum of Experiment not to be placed beyond 1,35 on the Arc of Vibration before the Pendulum is set going, so that the Arc of Vibration at the first time may not be much more, nor much less, than 1,3.

The Clock to be firmly secured, and quite upright: the Frame for suspending the Pendulum of Experiment also to be firmly secured; marks have been made by means of the Arc on the back of the Clock Case to shew the position the Pendulum ought to be brought to.

Should the Clock go too slow, screw up, or *shorten*, the Pendulum, as many divisions of the Nut at the bottom of it, as the Clock loses seconds in 24 hours*—should it go too fast, *lengthen* the Pendulum, as above by means of the Nut.

The Clock to be wound up once a week.

The Chronometers to be wound up at the same hour every day—one person to be specially appointed to do this.

In finding the Latitude—take Stars on each side of the Zenith.

Equal Altitudes the best mode of finding the Time, though in uncertain weather, it will be as well to take single Altitudes also, before 9 o'clock A. M. or after 3 P. M.

On the Days of Experiment it is absolutely necessary to have the rate of the Clock; this may be found both by the Sun, and with the Transit Instrument by the Stars.

In taking Bearings, on Ship board, use the Azimuth Compass: Allow for Currents, in making a Base of the Ship's run by the Log for a given time.

In taking the Meridian Altitude of a Star compute the exact time by the Chronometer when the Star passes; set the Index to the double Meridian Altitude nearly; and take the same at the instant, when, by the Chronometer, the Star is on the Meridian.

Of the Sextant Telescopes—always use that with the largest magnifying power—placing the Wires parallel to the face of the Instrument, and observing in the Centre of the Telescope. Screw the *Telescope well in* towards the face of the Instrument for Observations of the Stars—For the Sun, the middle of the Object Glass of the Telescope, should be placed opposite the middle of the unsilvered part of the horizon glass. Find the Error of the Sextant at the times when it is used. The horizontal diameter of the Sun should be taken for this purpose, if the Sun be low."

Form for registering the Experiments with the Pendulum.

April 2—A. M. *Inches.*

Rate of the Clock *Hygrometer.* *Barometer* { Beginning..30,126

By the ☉. By the * *. 14,8 dry. { End.....30,134

" "

Temperature.	Disc hid.	Disc reappeared.	Arc of Vibration	Remarks.
°	′ ″	′ ″		
81,95	41 16,5	41 25	1,38	
	53 12,5	53 21	1,29	
82,5	5 10	5 19,5	1,18	
	17 10	17 9,5	1,08	
82,47	29 8,5	22 22,5	1,00	

The above is from the Experiments made at the Observatory, before the Expedition sailed.

* The value of these divisions is not exactly a Second perhaps, but it will be found after two or three trials.

Nothing was denied, that a liberal and enlightened Government, in this distant quarter of the Globe could cause to be supplied ;—and the Expedition now only waited the arrival of a Company's Cruizer—two of which had been placed, for a particular service, under the orders of *His Excellency* SIR HENRY BLACKWOOD, *the Admiral of the Station,* and one of these was to have been spared, for a short time, to carry the Party to Bencoolen.

About the beginning of March, finding the Cruizer did not arrive,* and that a good opportunity offered for sending the Expedition on the Ship *Morning Star,* I addressed Government—stating that as the Season for going to the Northward from Bencoolen had commenced, it would be most desirable if the Party could proceed to that place without further delay—and as there was now some doubt whether the expected Cruizer would call here in time, or even at all, I proposed for the consideration of *The Honorable* THE GOVERNOR *in Council,* that the Expedition should proceed on the Ship before mentioned—this was ordered immediately, and the Party† embarked on the *Morning Star* on the 13th of March—the Instruments and Baggage having been sent on board the day before.

The following BRIEF ABSTRACT *of the* PROCEEDINGS,

is founded upon the DIARIES *kept at the time.*

After a passage of 34 days, the *Morning Star* arrived in Bencoolen Roads. On the 18th of April, the Party landed at Fort Malbro' with the Instruments and Baggage—Captain Crisp and his Family were invited by *Sir Stamford Raffles* to reside at the Government House. The Observers Messrs. Robinson and Lawrence and the Conductor and Sub Conductor were accommodated with rooms in the lower story of the old Government House until the 1st of May, when they removed into Tents about 200 feet N. E. of the House—The Lascars obtained their provisions from the Public Stores paying for the same, and the Europeans theirs from the Bazar. On the 20th of April, Messrs. Robinson and Lawrence commenced the Observations, according to the Instructions, which were continued during the stay of the Party at Bencoolen. On the 5th of May at about 10 minutes past 2 P. M. a violent and alarming shock of an Earthquake was felt—it lasted some time, the motion was considerable, attended by a noise, like that of the rushing of a strong wind---the old Government House shook extremely, but does not appear to have sustained much damage---some other shocks were felt in the course of the afternoon, but not so violent---the weather was clear, except to the northward over the Moun-

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* It is fortunate we did not wait longer for her, as she proceeded direct to Bengal.

† *The Party consisted of*

Captain Crisp, *in Command.*

Messrs. { *John Robinson,* / *Peter Lawrence,* } *Observers.*

{ *Mr. Hamilton, Conductor of Stores.* / *Mr. Flannigan, Sub Conductor.* }

One Second Tindal and nine Lascars.

tains, and a fresh N. W. wind prevailed at the time. On the 16th of May, Captain Crisp, with Messrs. Robinson and Lawrence and the Conductors, proceeded to Rat Island, with the view of ascertaining its position: In the afternoon the Party returned to Bencoolen, with the exception of Messrs. R. and L. who remained and took some Meridian Altitudes of Stars in the night, and Bearings and Angles of prominent Points next morning---in the afternoon they returned to Fort Marlbro', and on the following day recommenced their Observations. On the 24th May, from a station on the Turret of Fort Marlbro' about 50 feet above the level of the sea, Captain Crisp and Mr. Lawrence took Bearings and Angles of remarkable points on the lofty ranges of Mountains in the interior of Sumatra. On the 31st, Captain Crisp and the Observers proceeded to Pulo Bay, 9 or 10 miles S. E. of Fort Marlbro', where they arrived in the afternoon; here a Base was measured, and some Bearings and Angles of Objects in the interior and prominent points of the Range of Mountains taken; in the evening of the 1st of June they returned to Bencoolen.

On the 12th of June, Captain Crisp ordered the Party to be in readiness to embark on the Brig *Eleanor*, the property of the Master Attendant of Bencoolen, but engaged it was understood, for the Expedition—being too small for the Party, another but a smaller Vessel, belonging to the same owner, was also engaged. On the 13th, Messrs. Robinson and Lawrence, with two Lascars, embarked on the *Eleanor*, taking some of the smaller Instruments, and having in view to discover an Island at the Equator, suited to the purpose of making the Experiments upon—the Conductor and Sub-Conductor also embarked on the smaller Vessel. The Cabin of the *Eleanor* was found in possession of an Officer and his Family proceeding, it was understood, to Nattal, and the Hold was nearly filled with Bricks and Lime. On the 17th of June, the Vessels sailed from Bencoolen Roads for Nattal; on the 20th A. M. they passed Pulo Brinjen, and another small Island S. W. of the Poggy Islands. At night a very hard and continued Squall came on, accompanied by thunder, lightning and heavy rain; the Party were obliged to take refuge in the Hold, where with the hatches on, they were in danger of suffocation---the wind adverse, and extremely violent, drove the Vessel so far to leeward, that they were obliged to return to Bencoolen, where they arrived on the 23d, and on the following day, the smaller Vessel returned with the Conductors, who had suffered a good deal by the violence of the weather, in consequence of the state of their health, and had the greater part of their baggage rendered useless. On the 28th, Captain Crisp came on board, and ordered the Instruments and Baggage to be landed, and taken to Fort Marlbro'. 29th, Messrs. Robinson and Lawrence returned to their encampment, and recommenced observing—having Chronometers belonging to *Sir S. Raffles* and Captain Patterson of the H. C. Ship *Canning*—besides those with the Expedition, to ascertain the rates of. Most of the Party were attacked with fever during their stay at Bencoolen.

On the 21st of July the whole of the Party, with the Instruments, Tents, Baggage, &c. embarked on the H. C. Ship *Canning*, Captain Patterson, and on the 23d, they left Bencoolen Roads for Tappanooly; where the Ship arrived on the 8th of August,

and the Party landed on the 9th, to the great relief of the Observers and Conductors of Stores, who the Diaries state, had fared on board, in a way they had by no means expected.

The Tents were pitched on the Island of Tappanooly, near the House of the Resident, *Mr. Prince.* On the 11th, the Observations were commenced, on a small rocky height at the Southern extremity of the Island, near the Flag Staff. On the 15th, Mr. Robinson and the two Conductors, with Lascars, embarked on the *Eleanor,* (which had reached Tappanooly before the *Canning)* for Pulo Panjong where they arrived on the 21st. On the 29th of August, there was an Earthquake on shore, which was felt by those of the party who were afloat—the vessel appearing to receive a severe shock. September 5th, Captain Crisp with Mr. Lawrence proceeded to the Island of Pulo Bauka near the N. E. extremity of Tappanooly Bay, and afterwards to the remarkable Island called the Sugar Loaf Peak—Sights for the Longitude, and Bearings and Angles were taken, and they returned to Tappanooly about sun-set. 9th, Mr. Lawrence proceeded for Battoo Barroor Point, for the purpose of laying down its position, and the prominent points of the Mansellar Islands, together with some points of Tappanooly Bay. The Brig *Eleanor* returned on the 11th from Pulo Panjong. 12th, all the Baggage was sent on board the Brig, and the remainder of the Party embarked at sun-set for Pulo Panjong, where they arrived on the 16th. Observations were commenced by Mr. Lawrence on the following day at a station near the Resident's House. On the 18th, the *Eleanor* sailed for Bencoolen, for another supply of materials for the Pillar. September 19th, Mr. Lawrence proceeded with Captain Crisp to Pulo Telloor, where Observations for the Latitude and Longitude were taken, and also Angles of the adjacent Islands and that part on the Coast between Points Kurboyee and Lubwaun Looloo---returned late at night. Another excursion made on the 23d, to Pulo Pahgaugo, for the purpose of laying down its position; and it was intended to have proceeded thence to the other Islands near the Equator, but the winds and weather having been very unfavorable, they were obliged to return on the 25th to Pulo Panjong. On the 26th, they ventured out again for Nattal, but returned the following day. On the 29th at night, Captain Crisp in one Boat, and Mr. Lawrence in another, sailed for Nattal, and proceeded together as far as Pulo Tamang, where, early on the 2d of October, the Boats separated, the one with Captain Crisp proceeding round the West side of the Island, and the other taking a direct course for Nattal—the weather and winds being unfavourable, the latter strong with a heavy sea—the boat with Mr. Lawrence returned to Pulo Tamang—and on the 3d sailed again, but was obliged to proceed to the Sumatra shore for provisions and anchored in the River at Patann---Next day the 4th, having heard no intelligence of Captain Crisp, Mr. Lawrence wrote to the Resident, and received a reply late on the 5th, stating that Captain C. had not arrived at Nattal, and advising Mr. L. to return to Pulo Panjong---the weather very unfavorable at the time for Vessels of any description to proceed to the Northward : At sun rise on the 6th, they sailed however for Pulo Panjong, and fortunately arrived in the afternoon—Captain Crisp

having also returned. On the 4th, at 10 A. M. the weather being cloudy at the time, a shock of an Earthquake was felt, which is stated to have given the earth, an undulatory motion for some minutes—another (but a slighter) shock was felt shortly afterwards—these shocks appeared to come from the East—in the direction of Mount *Ophir*. On the 6th at night, two Vessels, one with Captain Crisp and the other with Mr. L. on board, sailed for Nattal, and arrived late at night on the 7th. On the 8th and 9th, Observations made. On the 10th in the morning, the position of Nattal Hill was laid down. In the evening they left Nattal on the Packet Boat for *Pulo Pinnee*, arrived at sun set on the 11th, and anchored close to a Coral Reef, the water on which being too shallow, they proceeded to the land, the S. E. part of the Island, in the small Boat—where Observations were taken for the Latitude and Longitude—they returned in the evening to the Packet Boat, and sailed for Pulo Panjong, where they arrived on the 15th of October. Early on the 23d, the Conductor and Sub Conductor, with a great part of the Baggage, embarked on the Packet Boat, and Mr. Lawrence on the small Boat, for Pulo Pinnee—but owing to adverse winds, and bad weather, were obliged to return on the 26th to Pulo Panjong. *The Padres*, a sect of Musselman Fanatics, being expected to attack our Possessions on this part of the Coast, Captain Crisp was appointed to a Command by *Sir Stamford Raffles*—On the 31st, that Officer and his Family embarked on a Brig for Nattal. Observations for the Rates of Chronometers, and for the Latitude and Longitude were commenced, and sketches of the Coast made. The *Eleanor* returned from Bencoolen on the 5th of November. On the 17th of November, Captain Crisp arrived in a small Boat from Nattal. On the 19th, Captain Crisp in one Boat, Mr. Lawrence and the Conductors in another, sailed for Pulo Pinnee—the night having been very dark, the Boats parted company, and the latter went on past Pulo Pahgaugo, as far as Tooleechemanah point—the wind being strong with a heavy sea, they were obliged to make the best of their way back to Pulo Panjong. At sun rise, made another attempt to proceed to Pulo Pinnee, and arrived at the S. E. extremity on the 23d—landed and commenced cutting down trees and clearing a place for the Tents. On the 26th, the Brig *Eleanor* having left Pulo Panjong on the 21st, arrived with Captain Crisp and Mr. Robinson, the greater part of the Instruments, Tents and Baggage—the Brig anchored about 5 miles off shore. In the course of the day, Captain Crisp, accompanied by the Sub-Conductor, came on shore in a Boat and afterwards returned to the Brig, with the intention of sending the Instruments and all the other articles on shore in the morning, but there having been very heavy squalls from the N. W. at night, during which the only two Boats they had were lost, it became impossible to land any thing, and the *Eleanor* was therefore got under weigh for Pulo Panjong, and did not return until the 7th, having touched at Nattal—On the 8th, Mr. Robinson and the Sub-Conductor landed with a part of the Baggage, and by the 9th in the evening all the articles were on shore and the Tents up—On the 10th Captain Crisp came on shore—they observed for the Latitude, and found the S. E. point of the Island nearly 5 minutes North of the Equator. On the 11th, Captain Crisp sailed for Pulo Panjong,

leaving directions for Mr. Lawrence and the Conductor to proceed to a small Island to the S. E. and to examine if it was suited to the purpose we required.* Early on the 16th Mr. Lawrence proceeded to the Island, with the requisite Instruments and a Baggage Tent, also three Lascars, and landed about 3 o'clock in the afternoon—The Conductor having been sick, was not able to accompany the party. On the 17th, they examined the Island, found it 11 feet above the level of the Sea, composed of sand seated upon a foundation of Coral, in length 365 feet and breadth 200 feet, distant from the main land about 10 Leagues, with a good landing place, and suitable in every respect for making the Experiments upon—having dug a hole to the depth of 7 feet, they found very good water, and in abundance—there being no other Islands in the vicinity nearer to the Equator than this. On the 18th, Mr. Lawrence returned off Pulo Pinnee, and on the following day, Mr. Robinson proceeded with a part of the Baggage, for the small Island, which is called *Gaunsah Lout*, where he landed—Mr. Lawrence and the Commander of the Brig sailing at the same time in a smaller boat, which having been found too deeply laden, and bad weather coming on, they returned, and did not reach the small Island until the following day. The Instruments, and Baggage were got to the Island by the 7th of January,—and the *Observatory* was put up.

On the 22d of December the Observations, having more immediate reference to the primary object of the Expedition, may be said to have commenced. At the Island *Gaunsah Lout*, a slight shock of an Earthquake was felt on the 30th of December, which lasted about half a minute. On the 10th of January, *Captain Crisp* arrived from Nattal, finding the Pillar commenced, and the Observations for the Latitude, Time, and Longitude, going on. On the 21st Captain Crisp arrived again from Nattal, and on the 23d proceeded to *Ayr Bongy*—The Conductor, whose health rendered it necessary, left the small Island for Pulo Panjong. The Pillar, having the Plugs of Teakwood inserted according to the Instructions, was finished on the 27th; there not having been Bricks sufficient—the Foundation and back part of the Pillar, were formed of pieces of the Coral Rock, which was found to be very hard, and at least equal to brick for the purpose. On the 31st of January, the Plank, and Frame for supporting the Pendulum of Experiment, were firmly secured in their places—The Clock Case was then screwed to the Plank—On the 2d of February Captain Crisp arrived from Nattal—the Works of the Clock were put up, and on the 5th Observations taken for finding its Rate. On the 7th Captain Crisp returned to Nattal on the Brig *Eleanor*, having seen that every thing was in a proper train for commencing the Experiments with the Pendulum---On the 11th, three of the savage Inhabitants of these parts, who came here under the pretence, or for the purpose, of fishing, got into the large Tent, and took from thence, the Transit Instrument, Azimuth Compass, Circumferentor, and a small box belonging to Captain Crisp; thinking, as it would appear, that the brass parts of the Instruments were gold.

On the 13th of February, Messrs. Robinson and Lawrence commenced the Experiments with the Pendulum, each taking separate Sets. On the 17th, a Boat with

* It appears from a Letter of *Captain Crisp's*, which was despatched by a circuitous route, and which I did not receive until the end of last September, although written many months before, that at this time his health had suffered very materially, by the labor and exposure, attendant upon going about, and in an open boat, in search of a proper Station for making the Experiments upon—some of his Family were also ill at the time at Nattal.

Provisions* for the Party arrived from Nattal—some of the Islands adjacent to *Gaunsah Lout,* were now visited by a few of the savage inhabitants, under the pretence of collecting Turtle—the Party, which consisted of Messrs. Robinson and Lawrence, the Sub-Conductor and 5 Lascars—2 of these ill of fever—thinking themselves a good deal exposed, added to what had before occurred, deemed it prudent to keep a look out during the night, and to establish an armed watch—who proceeded regularly round the Island after dark until day light—Captain Crisp having been made acquainted with the loss of the Instruments—Sepoys were despatched to the different Islands and Places, and search made for them, but without success. The loss of the Transit is much to be regretted, as although every precaution was taken to obtain a correct rate by the Sun, still the verification of this rate by the Stars, would have been very satisfactory.

The Experiments with the Pendulum were completed on the 20th of March---and as will be seen were very numerous—as well as the Observations for the Latitude —the other Observations, as directed in the Instructions, were also taken—On the 20th, Captain Crisp arrived from Nattal, and on the 21st ordered the Clock and Pendulum of Experiment, to be taken down and re-placed in their Cases—On the 23d A. M. the Instruments, Tents and Baggage, having been sent on board the *Eleanor,* Messrs. Robinson, Lawrence, with the Sub-Conductor and Lascars, embarked on that Vessel, and sailed for Pulo Pinnee, where they anchored in the former birth--On the 24th, Captain Crisp, who had been to Pulo Batooa, arrived, and the *Eleanor* sailed for Nattal---Mr. Lawrence and the Sub-Conductor, proceeded to Nattal on the small boat, where they arrived the same night. On the 28th, the Instruments and some of the Baggage were transhipped to the Brig *Sophia* belonging to Mr. Prince---some Observations were made during their stay here---On the 29th Captain Crisp and Family came on board the *Sophia,* where also was Mr. Lawrence ; and about 7 P. M. the vessel was got under weigh, and sailed for Bencoolen---The *Eleanor,* with the remainder of the Party, sailed at the same time for Pulo Panjong, and Padang, at the former place to take up the Conductor, Mr. Hamilton, and to lay down the Geographical position of the latter---The *Sophia* reached Bencoolen on the 9th of April, when the Instruments, and Baggage were landed. The Brig *Eleanor* arrived four days afterwards. The requisite Observations for the Time were taken, and after waiting about 30 days for a passage, the whole Party embarked on the Ship *Eleanor,* for Madras, and arrived in the Roads on the 4th of June.

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* The Food of the Party consisted chiefly of Salt Fish and Rice—with now and then a Fowl—they had no means of fishing, and most of them indeed, no time.

I shall now proceed to give the *Observations and Experiments.*

It may be necessary to premise, that the following Tables contain only the Observations which were considered to be the most accurate. The method of proving them, having been by calculating the *whole* of the Observations, then taking the mean—and any of the results which differed more than a given quantity from that mean, were not retained.* Of the Experiments with the Pendulum, I have not deemed it proper to admit those made on the days when the Clock was wound up; as it appears, that the machinery for keeping the Works in motion, while the Clock is winding, did not act, and that at such times the second hand was also liable to go back—it is true the Clock was compared, both before winding and after, with a Chronometer—but in an enquiry of this nature, where it was required to have the rate of the Clock to a very small fraction of a second, I thought it better to reject altogether the Experiments made on the days mentioned —particularly as the remaining Observations were so very numerous—The whole of the original Observations and Experiments are preserved, however, in the Books at the Observatory. None of the Pendulum Experiments have been rejected, except those just noticed, as having been taken on the days when the Clock was wound up—this was once a week.

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* Of the Observations for the Latitude of *Po. Gaunsah Lout* where the Experiments for ascertaining the Length of the Pendulum were made, I have not admitted those which differed more than 15 seconds from the mean of the whole—Nearly all the Observations taken there by *Assistant* Lawrence, stood this test—and very few were rejected. At other places where the Observations were less numerous, I have admitted all, not differing more than 25 and in some cases 30, seconds, from the mean.

AT BENCOOLEN.

Observations by Mr. P. Lawrence.

For the LATITUDE.

1822 Month.	Stars Observed.	Double Meridian Altitude.			Error of Sextant.	Height of the Therm.	Height of the Baromet.	Remarks.
		°	′	″	— ′ ″	°	Inches.	
April 25	α Crucis.....	63	24	45 S.	0· 45	78·3	30·12	
26	α Crucis.....	63	25	15	0· 45	78.6	30·1	The Place of Observation bears by Compass from the Turret of Fort Malbro' S. 23½d. W. distant about 269 yards. —The relative position of these, will however be accurately given, when finding the Latitude of the Fort.
27	α Crucis.....	63	25	30	0· 45	78·5	30·12	
29	α Crucis.....	63	24	50	0· 45	78·6	30·13	
	γ Ursæ Maj.....	63	06	55 N.	0· 45	78·6	30·09	
	β Ursæ Maj.....	57	47	35	0· 45	78·5	29·99	
	β Crucis.....	70	12	15 S.	0· 45	78 2	30·1	
	β Centauri.....	68	37	30	0· 45	78 2	30 08	
	Arcturus.....	132	14	05 N.	0· 45	78·2	30·1	
	α Cor. Bor.....	117	46	20	0· 45	78 1	30·06	
May 3	β Ursæ Maj.....	57	48	15	0· 45	82·	29·91	
	γ Ursæ Maj.....	63	06	20	0· 45	82·	29 91	
	α Crucis.....	63	24	50 S.	0· 45	81·5	29·96	
	β Crucis.....	70	11	25	0· 45	81·5	29·98	
	β Centauri.....	68	36	25	0· 45	82·	29·98	
	α Centauri.....	67	26	15	0· 45	82·	29 99	
7	α Crucis.....	63	24	40	0· 45	79 9	30 1	
	β Crucis.....	70	11	40	0· 45	79 9	30 1	
14	Sun L. L.....	134	56	15 N.	0· 47	88·	29·92	
15	Sun L. L.....	134	27	15	0· 47	90 5	29·91	
19	Sun L. L.....	132	37	35	0· 47	87 6	29 79	
20	Sun L. L.....	132	11	25	0· 47	84 6	29 5	
21	Sun L. L.....	131	46	30	0· 47	92·	29·9	
22	Sun L. L.....	131	21	35	0. 47	85·	29 8	
	α Crucis.....	63	24	15	0· 47	78 6	29 96	
	β Crucis.....	70	11	50	0· 47	78 6	29 96	
22	β Centauri.....	68	37	10 S.	0· 47	78·9	30 08	
	Arcturus.....	132	15	55 N.	0· 47	78·5	30 09	
	α Cor. Bor.....	117	46	35	0· 47	78·	30·10	
	Antares.....	135	33	40 S.	0· 47	80·3	30·	
27	Sun L. L.....	129	29	55 N.	0· 47	90·6	29·93	
	α Crucis.....	63	24	40 S.	0· 47	80·	30·09	
28	Sun L. L.....	129	10	10 N.	0· 47	91·2	29·90	
	α Crucis.....	63	24	40 S.	0· 47	79 9	30·09	
29	α Crucis.....	63	24	35	0· 47	79·8	30·10	
	γ Crucis.....	75	23	30	0· 47	79·8	30·09	
	β Crucis.....	70	11	35	0· 47	79 8	30·09	
	η Ursæ Maj.....	72	03	05 N.	0· 47	78·9	30·10	
	β Centauri.....	68	37	10 S.	0· 47	78·2	30·09	

1822, Month.	Stars Observed.	Double Meridian Altitude.			Error of Sextant.	Height of the		Remarks.
						Therm.	Barometer.	
		°	′	″	′ ″	°	Inches.	
	Arcturus.....	132	13	40 N.	0· 47	78·2	30 09	
July 6	Sun L. L.....	126	21	45	0· 45	87·4	29 92	
	η Ursæ Maj.....	72	03	20	0· 44	79 0	29 99	
	β Centauri.....	68	37	35 s.	0· 44	78 9	30 07	
	Arcturus.....	132	13	40 N.	0· 44	78·2	30 1	
	α Cor. Bor.....	117	47	25	0· 44	78·2	30·	
	Antares.....	135	33	20 s.	0· 44	80·4	29 97	
7	Sun L. L.	126	33	30 N.	0· 44	88·	29 90	
	η Ursæ Maj.....	72	03	35	0· 44	79 3	30·1	
	βCentuari.....	68	37	15 s.	0· 44	78 2	30·09	
	Arcturus.....	132	13	45 N.	0· 44	78 1	30 09	
	αCor. Bor.....	117	46	50	0· 44	78 2	30·10	
	Antares.....	135	33	10 s.	0· 44	80 4	29·99	
10	βCentauri.	68	37	30	0· 44	78·9	30·1	
	Arcturus.....	132	13	55 N.	0· 44	78·1	30·1	
	αCor. Bor.....	117	47	10	0· 44	78·2	30·08	
	Antares.....	135	52	35 s.	0· 44	80 0	30·	
	Sun L. L.....	127	14	25 N.	0· 44	88·5	29·90	
11	Sun L. L.....	127	29	15	0· 44	88·8	29 93	
	βCentauri.	68	37	15 s.	0· 44	82·	30·08	
	Arcturus.....	132	13	40N.	0· 44	78·1	30·06	
	αCor. Bor.....	117	47	30	0. 44	78.1	30·08	
	Antares.....	135	33	10 s.	0· 44	78·0	30·1	
	γ Draconis.....	69	25	50N.	0· 44	86 0	29 91	
12	Sun L. L.....	127	44	35	0· 44	89·	29·93	
13	Sun L. L.....	128	01	40	0· 44	88·0	29·9	
	Arcturus.....	132	13	30	0· 44	78·2	30·1	
	αCor. Bor.....	117	47	20	0· 44	78·2	30·1	
	Antares.....	135	33	30 s.	0· 44	78·5	30·09	
14	Sun L. L.....	128	18	55N.	0· 44	88·	29·9	
15	Sun L. L.....	128	37	10	0· 41	87·4	29·92	
	αCor. Bor.....	117	47	45	0· 44	78·3	30·1	
16	αCor. Bor.....	117	47	40	0· 44	78·0	30·07	
	Antares.....	135	33	05 s.	0· 44	80·3	30 0	
17	Sun L. L.....	129	15	30N.	0· 44	90·2	29·90	
	αCor. Bor.....	117	47	55	0· 44	78·2	30·08	
	Antares.....	135	33	20 s.	0· 44	80·	30·	
	γ Draconis.....	69	26	15 N.	0· 44	84·	30·1	

For the TIME, LONGITUDE, *and* RATES *of* CHRONOMETERS.

1822 Month.	Double Altitudes of the Sun.	TIMES BY CHRONOMETER 391. Forenoon.	Afternoon.	Comparison of the Chronometers with 391.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	These Observations were taken on our arrival at Bencoolen from Madras, at a station about 200 feet S. E. of the Old Government House.
April 20	92 L. L.....	7 37 25	1 07 29	391 10 22 27·8	
	94 L. L.....	7 41 42	1 03 11	397 10 32 24 3	
	96 U. L.....	7 43 40	1 01 10	0 9 56 5	
	96 L. L.....	7 45 59	12 58 52	391 10 22 27·8	
	98 U. L.....	7 48 02	12 56 52	*Earn.* 10 34 44 3	
	98 L. L.....	7 50 20	12 54 35 5	12 16 5	
	100 U. L.....	7 52 22	12 52 33		
April 21	107 U. L.....	8 07 51	12 36 16	391 10 22 06 6	
	107 L. L.....	8 10 12	12 33 54·5	397 10 32 15·5	
	109 U. L.....	8 12 17·5	12 31 49	0 10 08 9	
	109 L. L.....	8 14 41	12 28 25	391 10 22 06 6	
	111 U. L.....	8 16 47·5	12 27 19·5	*Earn.* 10 34 25·1	
	111 L. L.....	8 19 09	12 24 57	12 18 5	
	113 U. L.....	8 21 17·5	12 22 50		
	113 L. L.....	8 23 42	12 20 24		
April 25	97 U. L.....	7 46 27	12 54 35·5	391 10 20 35·2	
	97 L. L.....	7 48 49	12 52 15	397 10 31 34·2	
	99 U. L.....	7 50 52	12 50 13	10 59 0	
	99 L. L.....	7 53 13	12 47 50·5	391 10 20 35·2	
	101 U. L.....	7 55 16·5	12 45 47	*Earn.* 10 33 12·2	
	101 L. L.....	7 57 41	12 43 23	12 37·0	
	103 U. L.....	7 59 45	12 41 20		
	103 L. L.....	8 02 08·5	12 38 56		
	105 U. L.....	8 04 14	12 36 49·5		
	105 L. L.....	8 06 37·5	12 34 27		
April 26	97 U. L.....	7 46 37	12 53 43·5	391 10 20 14·1	
	97 L. L.....	7 49 00	12 51 24	397 10 31 27 1	
	99 U. L.....	7 51 02·5	12 49 16·5	11 13·0	
	99 L. L.....	7 53 26	12 46 55	391 10 20 14.1	
	101 U. L.....	7 55 32	12 44 49	*Earn.* 10 32 55·1	
	101 L L.....	7 57 54	12 42 28	12 41.0	
	103 U. L.....	7 59 59·5	12 40 20		
	103 L. L.....	8 02 25	12 37 58		
	105 U. L.....	8 04 31·5	12 35 51		
	105 L. L.....	8 06 55	12 33 28		
April 27	99 U. L.....	7 51 18	12 48 27	391 10 19 54 5	
	99 L. L.....	7 53 38	12 46 02	397 10 31 18·5	
	101 U. L.....	7 55 46	12 43 58	11 24 0	
	103 U. L.....	8 00 15·5	12 39 27	391 10 19 54 5	
	103 L. L.....	8 02 40	12 37 00	*Earn.* 10 32 39·5	
				12 45 0	

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 391. Forenoon.	Afternoon.	Comparison of the Chronometers with 391.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
				391 10 19 33·6	
April 28	99 L. L.....	7 53 53	12 45 05·5	397 10 31 11·6	
	101 U. L.....	7 55 59	12 43 02	11 38·0	
	101 L. L.....	7 58 22·5	12 40 35		
				391 10 19 33 6	
	103 U. L.....	8 00 30·5	12 38 29·5	*Earn.* 10 32 22·6	
	103 L. L.....	8 02 54·5	12 36 04	12 39 0	
April 29	97 L. L.....	7 49 36	12 48 05	391 10 19 13 9	
	99 U. L.....	7 51 45	12 46 37 5	397 10 31 04 9	
	99 L. L.....	7 54 08 5	12 44 14	11 51·0	
	101 U. L.....	7 56 14	12 42 06		
	101 L. L.....	7 58 39	12 39 41·5	391 10 19 13·9	
	103 U. L.....	8 00 48	12 37 32	*Earn.* 10 32 07·9	
	103 L. L.....	8 03 13 5	12 35 06·5	12 54·0	
	105 U. L.....	8 05 22 5	12 32 57 5		
	105 L. L.....	8 07 48 5	12 30 32 5		
May 2	97 U. L.....	7 48 08	12 48 43	391 10 18 28·2	
	97 L. L.....	7 50 31	12 46 18	397 10 35 45 2	
	99 U. L.....	7 52 40	12 44 10	17 17 0	
	99 L. L.....	7 55 05	12 41 44		
	101 U. L.....	7 57 15	12 39 34 5	391 10 18 28·2	
	101 L. L.....	7 59 42	12 37 07	*Earn.* 10 31 19·2	
	103 U. L.....	8 01 51·5	12 34 56 5	12 51 0	
	103 L. L.....	8 04 19	12 32 30		
	105 U. L.....	8 06 32·5	12 30 16		
	105 L. L.....	8 09 00 5	12 27 47 5		
May 3	97 U. L.....	7 48 24 5	12 47 51	391 10 18 11 9	
	97 L. L.....	7 50 49	12 45 27	397 10 30 40 4	
	99 U. L.....	7 52 56 5	12 43 18·5	12 38 5	
	99 L. L.....	7 55 24·5	12 40 52		
	101 U. L.....	7 57 36	12 38 42	391 10 18 11·9	
	101 L. L.....	8 00 04	12 36 14	*Earn.* 10 31 11·9	
	103 U. L.....	8 02 12 5	12 34 04	13 00 0	
	103 L. L.....	8 04 41	12 31 37		
	105 U. L.....	8 06 55 5	12 29 21		

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 397.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
July 1	101 U. L.....	8 38 14	12 38 08	397 10 38 09 9	These Observations were taken after those who had embarked, had been driven back to Bencoolen, when attempting to proceed to the Equator on the Brig *Eleanor*.
	101 L. L.....	8 41 14	12 35 11	391 10 15 46 9	
	103 U. L.....	8 43 52	12 32 30	0 22 23 0	
	103 L. L.....	8 46 54 5	12 29 28		
	105 U. L.....	8 49 39·5	12 26 40	397 10 38 09 9	
	105 L. L.....	8 52 44	12 23 35·5	*Earn.* 10 36 50·9	
	107 U. L.....	8 55 38·5	12 20 45	01 49·0	

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 397.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
July 2	100 U. L.....	8 35 28	12 41 22	397 10 38 24·8	
	100 L. L.....	8 38 23·5	12 38 29 5	391 10 15 42·8	
	102 U. L.....	8 41 06	12 35 46·5	0 22 42 0	
	102 L. L.....	8 44 04	12 32 50 5		
	104 U. L.....	8 46 45	12 30 06	397 10 38 24·8	
	104 L. L.....	8 49 49 5	12 27 06	*Earn.* 10 37 12 3	
	106 U. L.....	8 52 36 5	12 24 12 5	01 12 5	
	106 L. L.....	8 55 44	12 21 06		
July 3	100 U. L.....	8 35 24	12 41 56	397 10 38 38·8	
	100 L. L.....	8 38 23	12 38 59	391 10 15 36 8	
	102 U. L.....	8 41 02 5	12 36 18 5	23 02·0	
	102 L. L.....	8 44 01	12 33 19 5		
	104 U. L.....	8 46 45	12 30 34 5	397 10 38 38·8	
	104 L. L.....	8 49 45	12 27 33 5	*Earn.* 10 37 32 8	
	106 U. L.....	8 52 33 5	12 24 47	0 01 06·0	
	106 L. L.....	8 55 42	12 21 38·5		
July 4	100 U. L.....	8 35 27	12 42 22	397 10 38 53 1	
	100 L. L.....	8 38 23 5	12 39 27 5	391 10 15 37·1	
	102 U. L.....	8 41 00	12 36 48·5	23 16 0	
	102 L. L.....	8 43 57 5	12 33 50 5		
	104 U. L.....	8 46 40	12 31 09·5	397 10 38 53·1	
	104 L. L.....	8 49 41·5	12 28 06·5	*Earn.* 10 37 55 1	
	106 U. L.....	8 52 28·5	12 25 20 5	0 58 0	
	106 L. L.....	8 55 36 6	12 22 13		
July 5	100 U. L.....	8 35 24	12 42 52·5	397 10 39 07	
	100 L. L.....	8 38 18·5	12 39 58	391 10 15 30	
	102 U. L.....	8 40 56 5	12 37 20 5	0 23 37	
	102 L. L.....	8 43 52 5	12 34 23 5		
	104 U. L.....	8 46 34 5	12 31 42	397 10 39 07	
	104 L. L.....	8 49 38 5	12 28 37·5	*Earn.* 10 38 14	
	106 U. L.....	8 52 24	12 25 53·5	0 53	
	106 L. L.....	8 55 28	12 22 48·5		
July 6	100 U. L.....	8 35 19 5	12 43 24	397 10 39 20	
	100 L. L.....	8 38 42	12 40 31·5	391 10 15 21	
	102 U. L.....	8 40 49	12 37 53·5	23 59	
	102 L. L.....	8 43 45	12 34 56 5		
	104 U. L.....	8 46 28·5	12 32 15·5	397 10 39 20	
	104 L. L.....	8 49 29	12 29 14 5	*Earn.* 10 38 31	
	106 U. L.....	8 52 14 5	12 26 28	0 49	
	106 L. L.....	8 55 19	12 23 24		

1822 Month	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 397.	Remarks.
	°	h. ′ ″	h ′ ″	h ′ ″	
July 7	100 U. L.....	8 35 13·5	12 44 00·5	397 10 39 34	
	100 L. L.....	8 38 06·5	12 41 04·5	391 10 15 09	
	102 U. L.....	8 40 43 5	12 38 29	24 25	
	102 L. L.....	8 43 38·5	12 35 32 5	397 10 39 34	
	104 U. L.....	8 46 20	12 32 52·5	*Earn.* 10 38 49	
	104 L. L.....	8 49 22·5	12 29 49 5	0 45	
	106 U. L.....	8 52 05·5	12 27 07		
	106 L. L.....	8 55 09 5	12 24 03		
July 8	100 U. L.....	8 35 06	12 44 31	397 10 39 46	
	100 L. L.....	8 37 58	12 41 40	391 10 15 08	
	102 U. L.....	8 40 32	12 39 02 5	24 38	
	102 L. L.....	8 43 27	12 36 07	397 10 39 46	
	104 U. L.....	8 46 08·5	12 33 26 5	*Earn.* 10 39 05	
	104 L. L.....	8 49 08·5	12 30 27	0 41	
	106 U. L.....	8 51 51 5	12 27 44		
	106 L. L.....	8 54 55·5	12 24 39 5		
July 9	100 U. L.....	8 34 54·5	12 45 04·5	397 10 39 57	
	100 L. L.....	8 37 45·5	12 42 13 5	391 10 15 04	
	102 U. L.....	8 40 21	12 39 37·5	24 53	
	102 L. L.....	8 43 17	12 36 42 5	397 10 39 57	
	104 U. L.....	8 45 56·5	12 34 02	*Earn.* 10 39 22	
	104 L. L.....	8 48 55	12 31 04	0 35	
	106 U. L.....	8 51 38·5	12 28 20		
	106 L. L.....	8 54 39·5	12 25 18·5		
July 10	100 U. L.....	8 34 43·5	12 45 41 5	397 10 40 12	
	100 L. L.....	8 37 41	12 42 47	391 10 14 57	
	102 U. L.....	8 40 11	12 40 14 5	25 15	
	102 L. L.....	8 43 04 5	12 37 20·5	397 10 40 12	
	104 U. L.....	8 45 45·5	12 34 42·5	*Earn.* 10 39 42	
	104 L. L.....	8 48 43 5	12 31 43 5	0 30	
	106 U. L.....	8 51 24·5	12 29 01 5		
	106 L. L.....	8 54 26	12 25 59 5		
July 11	100 U. L.....	8 34 33	12 46 15 5	397 10 40 22	
	100 L. L.....	8 37 24	12 43 26	391 10 14 51	
	102 U. L.....	8 39 52	12 40 53·5	25 31	
	102 L. L.....	8 42 51	12 37 58	397 10 40 22	
	104 U. L.....	8 45 27 5	12 35 20	*Earn.* 10 39 56	
	104 L. L.....	8 48 24 5	12 32 23·5	0 26	
	106 U. L.....	8 51 08	12 29 41		
	106 L. L.....	8 54 08	12 26 39 5		

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 397.	Remarks.
	° ′	h. ′ ″	h. ′ ″	h. ′ ″	
July 12	100 L. L.....	8 37 08 5	12 44 02	397 10 40 32	
	102 U. L.....	8 39 41	12 41 28·5	391 10 14 50	
	102 L. L.....	8 42 33	12 38 36·5	25 42	
	104 U. L.....	8 45 10 5	12 35 58 5	397 10 40 32	
	104 L. L.....	8 48 02	12 33 04·5	*Earn.* 10 40 09	
	106 U. L.....	8 50 48 5	12 30 21	0 23	
	106 L. L.....	8 53 43 5	12 27 23 5		
July 13	100 U. L.....	8 34 04	12 47 29	397 10 40 44	
	100 L. L.....	8 36 53·5	12 44 40·5	391 10 14 41	
	102 U. L.....	8 39 26·5	12 42 06·5	26 03	
	102 L. L.....	8 42 17 5	12 39 15 5		
	104 U. L.....	8 44 55	12 36 38 5	397 10 40 44	
	104 L. L.....	8 47 50	12 33 44·5	*Earn.* 10 40 28	
	106 U. L.....	8 50 29 5	12 31 03·5	0 16	
	106 L. L.....	8 53 29	12 28 03·5		
July 14	100 U. L.....	8 33 48 5	12 48 07	397 10 40 56	
	100 L. L.....	8 36 35·5	12 45 18·5	391 10 14 33	
	102 U. L.....	8 39 08·5	12 42 47·5	26 23	
	102 L. L.....	8 41 59	12 39 57		
	104 U. L.....	8 44 37·5	12 37 19 5	397 10 40 56	
	104 L. L.....	8 47 30·5	12 34 26	*Earn.* 10 40 47	
	106 U. L.....	8 50 08·5	12 31 47 5	0 09	
	106 L. L.....	8 53 07 5	12 28 48 5		
July 15	100 U. L.....	8 33 33	12 48 46	397 10 41 07	
	100 L. L.....	8 36 19·5	12 45 58 5	391 10 14 23	
	102 U. L.....	8 38 52	12 43 28	0 26 44	
	102 L. L.....	8 41 40 5	12 40 38·5		
	104 U. L.....	8 44 16·5	12 38 00 5	397 10 41 07	
	104 L. L.....	8 47 09 5	12 35 08	*Earn.* 10 41 04	
	106 U. L.....	8 49 49	12 32 30	0 03	
	106 L. L.....	8 52 47·5	12 29 30 5		
July 16	100 U. L.....	8 33 15·5	12 49 22 5	397 10 41 16	
	102 U. L.....	8 38 32	12 44 06	391 10 14 13	
	102 L. L.....	8 41 19·5	12 41 19	27 03	
	104 U. L.....	8 43 54 5	12 38 43·5		
	104 L. L.....	8 46 45·5	12 35 51	397 10 41 16	
	106 U. L.....	8 49 25 5	12 33 12·5	*Earn.* 10 41 22	
	106 L. L.....	8 52 20	12 30 17·5	0 06	
	108 U. L.....	8 55 03 5	12 27 35		
	108 L. L.....	8 58 02 5	12 24 35		

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 397.	Remarks.
		h. ′ ″	h. ′ ″	h. ′ ″	
July 17	100 U. L.....	8 32 53	12 50 02·5	397 10 41 25	
	100 L. L.....	8 35 36	12 47 17	391 10 14 09	
	102 U. L.....	8 38 03	12 44 47	0 27 16	
	102 L. L.....	8 40 55	12 41 58·5		
	104 U. L.....	8 43 30·5	12 39 25	397 10 41 25	
	104 L. L.....	8 46 21·5	12 36 33	*Earn.* 10 41 36	
	106 U. L.....	8 48 58·5	12 33 56	0 11	
	106 L. L.....	8 51 53	12 31 01·5		
1823		*Earnshaw*		*with Earnshaw*	These Observations taken on our arrival at Bencoolen from Pulo Gaunsah Lou'—the station Captain Salmond's garden 300 yards S. S E of Fort Marlbro'.
April 10	96 U. L.....	9 13 09	2 39 32·5		
	96 L. L.....	9 15 23	2 37 18		
	98 U. L.....	9 17 19	2 35 22		
	98 L. L.....	9 19 33·5	2 33 06·5		
	100 U. L.....	9 21 28·5	2 31 11·5		
	100 L. L.....	9 23 43	2 28 56·5		
April 11	96 U. L.....	9 13 28	2 39 07·5		
	96 L. L.....	9 15 41·5	2 36 53·5		
	98 U. L.....	9 17 39	2 34 56		
	98 L. L.....	9 19 53	2 32 42·5		
	100 U. L.....	9 21 50·5	2 30 45		
	100 L. L.....	9 24 04	2 28 31		
	102 U. L.....	9 26 02	2 26 34		
	102 L. L.....	9 28 17	2 24 19		

For the Bearing *of* Fort Marlborough Turret, *and the* Variation *of the* Compass.

1822 Month.	Times by Chronometer 397.	Angle between the Sun's nearest Limb and Fort Marlborough.	Error of Sextant.	Remarks.
	h. ′ ″	° ′ ″	′ ″	
May 30	4 53 51	42 43 30	0· 47	
	4 56 02	42 39 40	0· 47	
	4 57 31	42 35 40	0· 47	
	4 58 45	42 33 45	0 47	
	5 00 02	42 30 50	0· 47	
July 4	4 59 25	41 29 55	0 44	
	5 00 46	41 28 30	0· 44	
	5 01 56	41 25 35	0· 44	
	5 02 09	41 24 25	0· 44	
	5 04 01	41 21 10	0· 44	
	5 05 04	41 20 40	0· 44	

1822 Month.	Times by Chronometers 397.	Angle between the Sun's nearest Limb and Fort Marlborough.	Error of Sextant.	Remarks.
	h. ′ ″	° ′ ″	′ _ ″	
July 5	5 09 42	41 32 30	0· 44	
	5 01 44	41 30 40	0· 44	
	5 02 39	41 28 45	0· 44	
	5 03 40	41 27 35	0· 44	
	5 04 41	41 25 30	0· 44	
	5 05 41	41 24 20	0· 44	
	5 06 40	41 22 10	0· 44	
	5 07 38	41 21 20	0· 44	
July 6	5 01 57	41 41 11	0· 44	
	5 03 07	41 40 00	0· 44	
	5 04 21	41 38 30	0· 44	
	5 05 26	41 37 10	0· 44	
	5 06 24	41 35 45	0· 44	
	5 07 29	41 34 50	0· 44	
	5 08 34	41 32 40	0· 44	
	5 09 29	41 30 45	0· 44	
July 11	5 02 44	42 09 00	0· 44	
	5 03 38	42 08 00	0· 44	
	5 04 38	42 06 05	0· 44	
	5 05 31	42 05 20	0· 44	
	5 06 19	42 04 00	0· 44	
	5 07 17	42 02 35	0· 44	
	5 08 12	42 00 50	0· 44	
July 13	5 01 45	42 28 25	0· 44	
	5 02 52	42 26 10	0· 44	
	5 03 56	42 24 10	0· 44	
	5 04 43	42 22 10	0· 44	
	5 07 23	42 19 25	0· 44	
	5 08 28	42 17 25	0· 44	
	5 09 17	42 15 40	0 44	
	5 10 31	42 13 50	0· 44	

For ascertaining the DISTANCE *between the* STATION *of Observation and Fort Marlborough* TURRET.

LENGTH OF THE BASE 399,9 FEET.

At the West end of the Base (or Station of Observation.)

between	*and*	Angles. ° ′ ″
East End of the Base.....	Fort Marlborough Turret.....	117 13 00

At the East End of the Base.

West End of the Base.....	Fort Marlborough Turret.....	43 02 00

Station on Fort Marlborough Turret.

		° ′ ″
Rat Island Station	Rat Island Flag Staff	0 54 15
,,	North high Peak (Lye Peak)	123 48 15
,,	High Peak (Goonum Pallee)	138 19 00
,,	Sugar Loaf Hill (Goonum Benkoo)	166 19 15
,,	Lion's Rump	166 15 15
,,	Bookit Kaboot	141 36 15
,,	Buffaloo point	64 41 00
,,	Staff on Tree (Mr. Presgrave's Garden)	22 44 00
,,	Station of Observation	29 46 30
	Elevation of Goonum Pallee	3 00 00
	Elevation of Goonum Benkoo	1 55 00

At Rat Island:

Observations for the Latitude.

1822 Month.	Stars Observed.	Double Meridian Altitude.	Error of Sextant.	Height of the Therm.	Height of the Baromet.	Remarks.
		° ′ ″	′ — ″	°	Inches.	
May 16	Sun's L. L.	133 53 15 N.	0 47	80·00	29	
	η Ursæ Maj.	71 58 30	0 47	80	29·83	
	β Centauri	68 43 05 S.	0 47	80	29·86	
	α Centauri	67 31 40	0 47	80	29·86	
	Arcturus	132 09 40 N.	0 47	80	29·84	
	α Cor. Bor.	117 41 25	0 47	80	29·84	

For the Time and Longitude of Rat Island.

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 391. Forenoon,	Afternoon.	Comparison of the Chronometers with 391.	Remarks.
	°	h. ′ ″	h. ′ ″		
May 16	105 U. L.	8 13 51	12 18 37		
	105 L. L.	8 16 33	12 15 36		

At Rat Island Station.

between	*and*	Angles. ° ′ ″
Fort Marlborough Turret	North high Peak (Lye Peak)	49 19 30
	High Peak (Goonum Pallee)	34 48 40
	Sugar Loaf Hill (Goonum Benkoo)	10 33 00
	Lion's Rump	9 30 00
	Staff on Tree (Mr. Presgrave's Garden)	1 49 00
	Buffaloo Point	77 32 50

At Pulo Bay.

LENGTH OF THE BASE 3442,2 FEET.

At the East End of the Base.

		°	′	″
West End of the Base	Rat Island	61	22	30
	Marlberough point	102	31	30
	Hamilton's Tomb	109	28	00
	Sugar Loaf Hill (Goonum Benkoo)	143	40	30
	Lion's Rump	159	46	00
	Argyle Hill Tree	167	08	00

At the West End of the Base.

East End of the Base	Rat Island	114	32	15
	Marlborough point	73	07	30
	Hamilton's Tomb	65	33	30
	Sugar Loaf Hill (Goonum Benkoo)	35	31	30
	Lion's Rump	19	33	00
	Argyle Hill	11	37	15

AT TAPPANOOLY ISLAND.

OBSERVATIONS

for the LATITUDE.

1822 Month.	Stars Observed.	Double Meridian Altitude.			Error of Sextant.	Height of the Therm.	Height of the Baromet.	Remarks.
		°	′	″	′ ″	°	Inches.	
Aug. 11	Antares.....	134	30	10 s.	0· 44	83 0	29 8	
13	γDraconis.....	80	28	50 N.	0· 44	82·5	29·82	
	αLyræ	106	15	15	0· 44	82 8	29·82	
15	Antares.....	124	30	00 s.	0· 44	83·3	29 8	
	ε Scorpionis.....	108	39	20	0· 44	82·3	29 98	
	λScorpionis.....	102	39	05	0· 44	82·3	29·99	
	γ Draconis.... ..	80	28	40 N.	0· 44	82 3	29·84	
	αLyræ.....	106	14	55	0· 44	82 8	29 8	
17	γ Draconis	80	29	15	0· 44	82·4	29 84	
21	γ Draconis.... ..	80	28	45	0· 44	82.	29·90	
	αLyræ.....	106	15	20	0· 44	81·9	29 95	
22	γ Dracenis	80	28	35	0· 44	80·4	29·9	
	αLyræ.....	106	15	20	0· 44	80·3	29·84	
	βLyræ.....	117	09	55	0· 44	80·4	29·9	
	ε Sagittarii	116	19	45 s.	0· 44	80·4	29·94	
26	λScorpionis.....	102	38	55	0· 44	83·5	29·91	
	ε Sagittarii	107	39	55	0· 44	83·5	29·9	
Sept. 1	λScorpionis.....	102	38	55	0· 44	82·6	29·96	
	γ Draconis	80	28	50 N.	0· 44	81·4	29·9	
	ε Sagittarii	107	39	05 s.	0· 44	81·6	29·88	
	αLyræ.....	106	14	55 N.	0· 44	80 8	29·84	
	ε Sagittarii	116	19	15 s.	0. 44	80.4	29·88	
	βCygni	128	18	35 N.	0· 44	81·5	29 9	
	δ Cygni	94	06	00	0· 44	81·5	29·9	
	αPavonis.....	62	01	30 s:	0· 44	81·4	29·9	
	γCygni.....	104	06	55 N.	0· 44	81·4	29·91	
	αCygni.....	94	11	35	0· 44	81·4	29·91	
	Fomalhaut.....	80	58	20 s.	0· 44	81·3	29·93	
2	λScorpionis	102	39	10 s.	0· 44	82·3	29·98	
	γDraconis	80	28	40 N.	0· 44	81·4	29·91	
	ε Sagittarii:	107	39	40 s.	0· 44	81·4	29·9	
	αLyræ.....	106	15	00 N.	0· 44	80·8	29 83	
	ε Sagittarii.....	116	19	10 s.	0· 44	80·4	29·88	
	αSagittarii.....	94	41	40	0· 44	80·4	29 88	
	βCygni.....	128	18	35 N.	0· 44	80·5	29·9	
	δ Cygni.....	94	05	40	0· 44	80·5	29·9	
	αPavonis.....	62	01	15 s.	0· 44	80·4	29·92	
	γCygni.....	104	06	45 N.	0· 44	80·4	29 92	
	αCygni.....	94	11	30	0· 44	80·6	29·93	

1822 Month.	Stars Observed.	Double Meridian Altitude.	Error of Sextant.	Height of the Therm.	Height of the Baromet.	Remarks.
		° ′ ″	′ ″	°	Inches.	
	α Gruis.....	80 58 20 s.	0 44	80 6	29 9	
	Fomalhaut.....	115 27 20	0 44	80·6	29 9	
Sept. 8	α Lyræ.....	106 14 55 N.	0 44.	80 8	29·8	
	β Lyræ.....	117 09 45	0 44	80·4	29·89	
	β Cygni.....	128 18 30	0 44	80·4	29 90	

For the TIME, LONGITUDE, *and* RATES *of* CHRONOMETERS.

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 397.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
Aug. 11	100 U. L.....	8 22 54	1 30 06	397 10 56 26	
	100 L. L.....	8 25 07 5	1 27 49 5	391 10 19 41	
	102 U. L.....	8 27 11	1 25 45 5	0 36 45	
	102 L. L.....	8 29 28	1 23 30 5	397 10 56 26	
	104 U. L.....	8 31 31·5	1 21 25 5	*Earn.* 10 59 05	
	104 L. L.....	8 33 48	1 19 07	02 39	
	106 U. L.....	8 35 53	1 17 03 5		
Aug. 12	100 U. L.....	8 22 21	1 30 19·5	397 10 56 17	
	100 L. L.....	8 24 36·5	1 28 01·5	391 10 19 20	
	102 U. L.....	8 26 39	1 25 59	0 36 57	
	102 L. L.....	8 28 51	1 23 45	397 10 56 17	
	104 U. L.....	8 31 03	1 21 36·5	*Earn.* 10 59 10	
	104 L. L.....	8 33 19·5	1 19 22	02 53	
	106 U. L.....	8 35 23·5	1 17 18		
	106 L. L.....	8 37 40	1 15 01 5		
Aug. 13	100 U. L.....	8 24 06	1 28 18 5	397 10 56 09 391 10 18 59	
	104 L. L.....	8 32 44·5	1 19 37·5	0 37 10	
	106 U. L.....	8 34 47·5	1 17 32 5	397 10 56 09	
	106 L. L.....	8 37 04	1 15 16·5	*Earn.* 10 59 14	
				03 05	
Aug. 14	102 U. L.....	8 25 35 5	1 26 22 5	397 10 55 57	
	102 L. L.....	8 27 51	1 24 07	391 10 18 37	
	104 U. L.....	8 29 55	1 22 05	0 37 20	
	104 L. L.....	8 32 11	1 19 51	397 10 55 57	
	106 U. L.....	8 34 12·5	1 17 45·5	*Earn.* 10 59 16	
	108 L L.....	8 40 49 5	1 11 10	03 19	

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 397.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″ °	
Aug. 15	100 U. L.....	8 20 50·5	1 30 49·5	397. 10 55 47	
	100 L. L.....	8 23 05	1 28 34 5	391. 10 18 15	
	102 U. L.....	8 25 05	1 26 33	0 37 32	
	102 L. L.....	8 27 21·5	1 24 17·5		
	104 U. L.....	8 29 22	1 22 16		
	104 L. L.....	8 31 37·5	1 20 00·5		
	106 U. L.....	8 33 40 5	1 17 58 5		
	106 L. L.....	8 35 56	1 15 42·5		
Aug. 16	100 U. L.....	8 20 19	1 30 57 5	397. 10 55 36	
	100 L. L.....	8 22 32·5	1 28 44	391. 10 17 52	
	102 U. L.....	8 24 33	1 26 42·5	37 44	
	102 L. L.....	8 26 48	1 24 27 5		
	104 U. L.....	8 28 50	1 22 26		
	104 L. L.....	8 31 05	1 20 10 5		
	106 U. L.....	8 33 07	1 18 10		
	106 L. L.....	8 35 22	1 15 54		
Aug. 18	100 L. L.....	8 21 30	1 28 58 5	397. 10 55 12	
	102 U. L.....	8 23 30 5	1 26 57·5	391. 10 17 05	
	102 L. L.....	8 25 45	1 24 43 5	0 38 07	
	104 U. L.....	8 27 45 5	1 22 43 5		
	104 L. L.....	8 30 00	1 20 30		
	106 U. L.....	8 32 00	1 18 28		
	106 L. L.....	8 34 14	1 16 15 5		
Aug. 19	100 U. L.....	8 18 45	1 31 18 5	397. 10 55 00	
	100 L. L.....	8 20 59	1 29 05	391. 10 16 45	
	102 U. L.....	8 22 58	1 27 05·5	38 15	
	102 L. L.....	8 25 12	1 24 51 5		
	104 U. L.....	8 27 12	1 22 51		
	104 L. L.....	8 29 25 5	1 20 38 5		
	106 U. L.....	8 31 26	1 18 38		
	106 L. L.....	8 33 40	1 16 24		
Aug. 20	104 U. L.....	8 26 41·5	1 22 57·5	397. 10 54 47	
	104 L. L.....	8 28 53 5	1 20 44 5	391. 10 16 23	
	106 U. L.....	8 30 53	1 18 45	38 24	
	106 L. L.....	8 33 06·5	1 16 30·5		
	108 U. L.....	8 35 07	1 14 30 5		
	108 L. L.....	8 37 20 5	1 12 16 5		
	110 U. L.....	8 39 21·5	1 10 17		
	110 L. L.....	8 41 36	1 08 01·5		

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 397.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
Aug. 22	102 U. L.....	8 21 19 5	1 27 18·5	397. 10 54 17·5	
	102 L. L.....	8 23 32 5	1 25 06	391. 10 15 33·5	
	104 U. L.....	8 25 32	1 23 06	38 44·0	
	104 L. L.....	8 27 45 5	1 20 54		
	106 U. L.....	8 29 45	1 18 54 5		
	106 L. L.....	8 31 57	1 16 42 5		
	108 U. L.....	8 33 57	1 14 43		
	108 L. L.....	8 36 08·5	1 12 29·5		
Aug. 23	100 U. L.....	8 16 38·5	1 31 31·5	397. 10 54 03	
	100 L. L.....	8 18 59	1 29 20·5	391. 10 15 13	
	102 U. L.....	8 20 48	1 27 20·5	0 38 50	
	102 L. L.....	8 23 00	1 25 09		
	104 U. L.....	8 24 59 5	1 23 10		
	104 L. L.....	8 27 11·5	1 20 57·5		
	106 U. L.....	8 29 10 5	1 18 57		
Aug. 24	100 U. L.....	8 16 08·5	1 31 32 5	397. 10 53 49	
	100 L. L.....	8 18 20	1 29 21	391. 10 14 52	
	102 U. L.....	8 20 17 5	1 27 23	38 57	
	102 L. L.....	8 22 29·5	1 25 11·5		
	104 U. L.....	8 24 27·5	1 23 13·5		
	104 L. L.....	8 26 39	1 21 01·5		
	106 U. L.....	8 28 37 5	1 19 03·5		
	106 L. L.....	8 30 49	1 16 51		
Aug. 25	105 U. L.....	8 25 58·5	1 21 08 5	397. 10 53 32	
	105 L. L.....	8 28 10	1 18 57·5	391. 10 14 24	
	107 U. L.....	8 30 09	1 16 59	39 08	
	107 L. L.....	8 32 20·5	1 14 47		
	109 U. L.....	8 34 19	1 12 48		
	109 L. L.....	8 37 29 5	1 10 36 5		
	111 U. L.....	8 39 28·5	1 08 38 5		
	111 L. L.....	8 40 40·5	1 06 26		
Sept. 1	106 U. L.....	8 24 19	1 18 52	397. 10 51 33	
	106 L. L.....	8 26 27 5	1 16 42	391. 10 10 57	
	108 U. L.....	8 28 22·5	1 14 46 5	40 36	
	108 L. L.....	8 30 31	1 12 36		
	110 U. L.....	8 32 24	1 10 42		

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 397.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
Sept. 2	100 U. L.....	8 11 32	1 31 CO·5	397. 10 51 15	
	100 L. L.....	8 13 41·5	1 28 51·5	391. 10 10 30	
	102 U. L.....	8 15 36	1 26 56	0 40 45	
	102 L. L.....	8 17 45	1 24 47		
	104 U. L.....	8 19 41	1 22 51		
	104 L. L.....	8 21 50	1 20 41·5		
	106 U. L.....	8 23 46	1 18 46 5		
Sept. 3	100 U. L.....	8 11 03	1 30 53	397. 10 50 58	
	100 L. L.....	8 13 12	1 28 44·5	391. 10 09 59	
	102 U. L.....	8 15 08	1 26 49	0 40 59	
	102 L. L.....	8 17 16·5	1 24 40		
	104 U. L.....	8 19 12 5	1 22 46		
	104 L. L.....	8 21 21 5	1 20 36 5		
	106 U. L.....	8 23 16	1 18 42		
	106 L. L.....	8 25 25	1 16 33		
Sept. 4	100 U. L.....	8 10 36 5	1 30 45	397. 10 50 39	
	100 L. L.....	8 12 45 5	1 28 36	391. 10 09 31	
	102 U. L.....	8 14 39	1 26 41·5	0 41 08	
	102 L. L.....	8 16 47 5	1 24 33		
	104 U. L.....	8 18 42	1 22 37 5		
	104 L. L.....	8 20 51·5	1 20 28		
	106 U. L.....	8 22 47	1 18 34 5		
	106 L. L.....	8 24 56	1 16 25		
Sept. 6	101 U. L.....	8 11 44	1 28 15	397. 10 50 04	
	103 L. L.....	8 17 56	1 22 14 5	391. 10 08 26	
	105 U. L.....	8 19 49	1 20 20	0 41 38	
	105 L. L.....	8 21 58	1 18 11		
	107 U. L.....	8 23 52	1 16 17		
	107 L. L.....	8 26 00·5	1 14 08		
Sept. 8	101 U. L.....	8 10 49	1 28 02·5	397. 10 49 25	
	101 L. L.....	8 12 58	1 25 54 5	391. 10 07 20	
	103 U. L.....	8 14 51	1 24 00	0 42 05	
	103 L. L.....	8 16 59·5	1 21 52		
	105 U. L.....	8 18 53	1 19 58		
	105 L. L.....	8 21 01	1 17 49 5		
	107 U. L.....	8 22 54 5	1 15 57		
	107 L. L.....	8 25 03 5	1 13 49		

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 391.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
Sept. 12	100 U. L.	8 07 07 5	1 29 05	397. 10 48 06	
	100 L. L.....	8 09 16	1 26 58	391. 10 05 01	
	102 U. L.....	8 11 09	1 25 04·5	0 43 05	
	102 L. L.....	8 13 17	1 22 56·5		
	104 U. L.....	8 15 09·5	1 21 13		
	104 L. L.....	8 17 16·5	1 18 55·5		
	106 U. L.....	8 19 09·5	1 17 02 5		
	106 L. L.....	8 21 17·5	1 14 54·5		

For the BEARING *of the* SUGAR LOAF PEAK *and the* VARIATION *of the* COMPASS.

1822 Month.	Times by Chronometer 397.	Angle between the Sun's nearest Limb and Sugar Loaf Peak.	Error of Sextant.	Remarks.
	h. ′ ″	° ′ ″	′ — ″	
Aug. 31	4 41 57 P.M.	76 45 50	0· 44	
	4 44 05	76 46 50	0· 44	
Sept. 1	4 35 34	76 21 25	0· 44	
2	4 41 23	76 02 13	0· 44	

At the SUGAR LOAF PEAK.

OBSERVATION for the LATITUDE.

1822 Month.	Sun Observed.	Meridian Altitude.	Error of Sextant.	Height of the Therm.	Height of the Baromet.	Remarks.
		° ′ ″	′ — ″			
Sept. 5	Sun's L. L.....	95 12 40 N.	0· 44			

For the TIME *and* LONGITUDE *of the* SUGAR LOAF PEAK.

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397 Forenoon.	Error of Sextant.	Comparison of the Chronometers with 397.	Remarks.
	°	h. ′ ″	′ — ″	h. ′ ″	
Sept. 5	91 U. L.....	7 52 14	0· 44	397. 7 57 20·5	
	91 L. L.....	7 54 22 5	0 ·44	391. 7 15 58·5	
	93 U. L.....	7 56 16	0· 44	41 22·0	
	93 L. L.....	7 58 25	0· 44		
	95 U. L.....	8 00 18 5	0· 44		
	95 L. L.....	8 02 27	0· 44		

At Pulo Panjong.

Observations

for the Latitude.

1822 Month.	Names.	Double Meridian Altitude.	Error of Sextant.	Height of the Therm.	Height of the Barom.	Remarks.
		° ′ ″	′ ″	°	Inches.	
Sept. 17	αLyræ	103 09 55 N.	0. 44	80	29 91	
	βCygni	125 12 55	0. 44	80	29·91	
	αPavonis	65 04 50 S.	0. 44	80·0	29·91	
	αCygni	91 07 20 N.	0. 44	80	29 94	
	αGruis	84 01 25 S.	0. 44	79·8	29 94	
18	αPavonis	65 04 40	0. 44	83.3	29 90	
	Fomalhaut	118 31 35	0. 44	83·3	29·91	
	βPegasi	126 10 30 N.	0. 44	83 3	29·91	
21	βCygni	125 13 05	0. 44	80·2	30	
	γCygni	101 01 15	0. 44	80·2	30	
	αCygni	91 06 55	0. 44	80·1	30	
	ε Cygni	113 48 15	0. 44	80.1	29 96	
	αGruis	84 01 30 S.	0. 44	80	29 96	
	βGruis	84 02 40	0. 44	80	29 98	
	Fomalhaut	118 31 55	0. 44	80	29 98	

For the Time, Longitude, and Rates of

Chronometers.

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Times by Chronometer 397. Afternoon.	Comparison of the Chronometers with 397.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
Sept. 17	101 U. L.	8 05 19·5	1 23 05·5	397. 10 44 12	
	101 L. L.	8 07 27 5	1 20 57·5	391. 9 59 55	
	103 U. L.	8 09 21	1 19 05	0 44 17	
	103 L. L.	8 11 29	1 16 56 5		
	105 U. L.	8 13 21 5	1 15 03·5		
	107 U. L.	8 17 21	1 11 04·5		
	107 L. L.	8 19 28·5	1 08 57		
18	100 U. L.	8 02 55 5	1 24 48	397. 10 43 51	
	100 L. L.	8 05 03	1 22 40·5	391. 9 59 28	
	102 U. L.	8 06 55	1 20 48	44 23	
	102 L. L.	8 09 02·5	1 18 40		
	104 U. L.	8 10 54 5	1 16 47		
	106 U. L.	8 14 54	1 12 48		
	106 L. L.	8 17 02	1 10 39·5		

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 397.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
Sept. 22	100 U. L.....	8 01 24	1 23 35	397. 10 42 29	
	100 L. L.....	8 03 31·5	1 21 27·5	391. 9 57 36	
	102 U. L.....	8 05 22·5	1 19 34·5	44 53	
	102 L. L.....	8 07 31	1 17 26 5		
	104 U. L.....	8 09 23·5	1 15 34 5	397. 10 42 29	
	104 L. L.....	8 11 31	1 13 27	*Earn.* 10 53 13	
	107 U. L.....	8 15 23	1 09 36	0 10 44	
26	104 U. L.....	8 08 12·5	1 14 17	397. 10 41 15	
	104 L. L.....	8 10 21	1 12 08 5	391. 9 55 39	
	106 U. L.....	8 12 13	1 10 16 5	0 45 36	
	106 L. L.....	8 14 21	1 08 09		
	108 U. L.....	8 16 13	1 06 16 5	397. 10 41 15	
	108 L. L.....	8 18 21·5	1 04 08 5	*Earn.* 10 53 13	
	110 U. L.....	8 20 13·5	1 02 16 5	11 58	
	110 L. L.....	8 22 21	1 00 08 5		
28	102 U. L.....	8 03 39	1 17 30	397. 10 40 36	
	102 L. L.....	8 05 48·5	1 15 21	391. 9 55 42	
	104 U. L.....	8 07 39 5	1 13 29 5	44 54	
	104 L. L.....	8 09 48	1 11 21·5		
	106 U. L.....	8 11 39·5	1 09 30	397. 10 40 36	
	106 L. L.....	8 13 49	1 07 21 5	*Earn.* 10 53 07	
	108 U. L.....	8 15 41	1 05 31	12 31	
	108 L. L.....	8 17 49 5	1 03 22		
Oct. 19	101 U. L.....	8 00 31	1 10 07	397. 10 35 20	
	101 L. L.....	8 02 43 5	1 07 54	391. 9 44 32	
	103 U. L.....	8 04 38	1 05 56·5	50 48	
	103 L. L.....	8 06 52·5	1 03 43·5		
	105 U. L.....	8 08 48	1 01 47	397. 10 35 20	
	105 L. L.....	8 11 02	12 59 35	*Earn.* 10 52 55	
	107 U. L.....	8 13 01	12 57 35·5	17 35	
	107 L. L.....	8 15 14 5	12 55 23		
20	100 U. L.....	7 58 38	1 11 45 5	397. 10 35 13	
	100 L. L.....	8 00 52	1 09 31	391. 9 44 09	
	102 U. L.....	8 02 46 5	1 07 35 5	51 04	
	102 L. L.....	8 05 01	1 05 20 5		
	104 U. L.....	8 06 58·5	1 03 24	397. 10 25 13	
	106 L. L.....	8 13 23	12 56 58	*Earn.* 10 53 02	
	108 U. L.....	8 15 19 5	12 55 01 5	27 49	

1822 Month	Double Altitudes of the Sun.	Times by Chronometer 391. Forenoon.	Afternoon.	Comparison of the Chronometers with 391.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
				391. 9 41 26	
Oct. 30	100 L. L.....	7 10 54	12 11 54	397. 10 34 35	
	102 U. L.....	7 12 53	12 09 54	0 53 09	
	102 L. L.....	7 15 11	12 07 34 5	391. 9 41 26	
	104 U. L.....	7 17 11·5	12 05 34	*Earn.* 10 54 16	
	106 L. L.....	7 23 52 5	11 58 54	1 12 50	
				391. 9 39 03	
				397. 10 35 08	
Nov. 12	107 U. L.....	7 28 03·5	11 49 54 5	0 56 05	
	107 L. L.....	7 30 33	11 47 29	391. 9 39 03	
				Earn. 10 57 06·5	
				1 18 03 5	
13	101 U. L.....	7 14 43	12 03 13	391. 9 39 01	
	101 L. L.....	7 17 11	12 00 44·5	397. 10 35 18	
	103 U. L.....	7 19 17·5	11 58 38	0 56 17	
	103 L. L.....	7 21 47	11 56 08	391. 9 39 01	
	105 U. L.....	7 23 53·5	11 54 00·5	*Earn.* 10 57 32	
	105 L. L.....	7 26 24·5	11 51 30 5	1 18 31	
	107 U. L.....	7 28 33	11 49 22		
	107 L. L.....	7 31 04·5	11 46 50·5		
14	101 U. L.....	7 15 06·5	12 02 39	391. 9 38 55	
	101 L. L.....	7 17 36	12 00 08·5	397. 10 35 26	
	103 U. L.....	7 19 43	11 58 01 5	0 56 31	
	103 L. L.....	7 22 13	11 55 30·5	391. 9 38 55	
	105 U. L.....	7 24 21	11 53 23	*Earn.* 10 57 49	
	105 L. L.....	7 26 51·5	11 50 52·5	1 18 54	
	107 U. L.....	7 29 00	11 48 44		
	107 L. L.....	7 31 32	11 46 12 5		
		Chronometer 397.		*with* 397	
16	101 U. L.....	8 12 53	12 58 35	397. 10 35 47	
	101 L. L.....	8 15 24	12 56 04	391. 9 38 54	
	103 U. L.....	8 17 32·5	12 53 55 5	0 56 53	
	103 L. L.....	8 20 04·5	12 51 24	397. 10 35 47	
	105 U. L.....	8 22 13	12 49 14·5	*Earn.* 10 58 35	
	105 L. L.....	8 24 45	12 46 42	22 48	
	107 U. L.....	8 26 55·5	12 44 32		
	107 L. L.....	8 29 29	12 41 59		
17	101 U. L.....	8 13 36	12 58 18	397. 10 36 00	
	101 L. L.....	8 16 06·5	12 55 47	391. 9 38 56	
	103 U. L.....	8 18 15 5	12 53 38	0 57 04	
	103 L. L.....	8 20 57	12 51 05·5	397. 10 36 00	
	105 U. L.....	8 22 57	12 48 55	*Earn.* 10 58 56	
	105 L. L.....	8 25 30·5	12 46 22	22 56	
	107 U. L.....	8 27 41·5	12 44 13		
	107 L. L.....	8 30 16	12 41 36 5		

For the Bearing of MOUNT OPHIR
and the Variation of the Compass.

1822 Month.	Times by Chronometer 397.	Angle between the Sun's nearest Limb and MOUNT OPHIR.	Error of Sextant.	Remarks.
	h. ′ ″	° ′ ″	′ — ″	
Nov. 15	4 21 22	12 31 50	0· 45	
16	4 43 26	16 54 15	0· 45	
	4 45 32	17 28 10	0· 45	
	4 46 56	17 40 10	0· 45	
	4 48 44	18 00 10	0· 45	
16	4 50 05	18 16 30	0· 45	
	4 51 40	18 38 10	0· 45	
	4 52 52	18 54 20	0· 45	
	4 54 01	19 11 30	0· 45	

At Pulo PANJONG *Station.*

between	*and*	ANGLES. ° ′ ″
Pulo Telloor.....	Pulo Pahgaugo.....	105 52 30
	Ayer Bonghy Hill.....	53 16 30
	Lubwaun Hill.....	82 22 00
	Goonum Allyee.....	75 44 00
	MOUNT OPHIR (or Passaman).....	44 02 30
	High Peak on the Range.....	93 21 00
	Kurboyee Hill.....	32 22 00
Elevation of MOUNT OPHIR.....		2 00 00

At Pulo TELLOOR:

Observation

for the LATITUDE.

1822 Month.	Name.	Meridian Altitude.	Error of Sextant.	Height of the Therm.	Height of the Barom.	Remarks.
		° ′ ″	′ — ″	°	Inches.	
Sept. 19	Sun's L. L....	88 11 45 N.	0· 45	88·5	29·91	

For the TIME *and* LONGITUDE *of*

Pulo TELLOOR.

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397 Forenoon.	Error of Sextant.	Comparison of the Chronometers with 397.	Remarks.
	° ′	h. ′ ″	′ — ″	h. ′ ″	
Sept. 19	86 U. L.....	7 34 15·5	0· 44	397. 7 50 00	
	86 L. L.....	7 36 23	0· 44	391. 7 05 32	
	90 U. L.....	7 42 14·5	0· 44	0 44 28	
	90 L. L.....	7 44 23	0· 44		
	92 U. L.....	7 46 16	0· 44		
	92 L. L.....	7 48 24	0· 44		

At Pulo TELLOOR.

between	*and*	ANGLES. ° ′ ″
Pulo Panjong	Pulo Pahgaugo	21 26 00
	Ayer Bonghy Hill	48 01 35
	Lubwaun Hill	39 24 00
	Goonum Allyee	50 54 15
	Mount Ophir	130 50 00
	High Peak on the Range	76 21 00
	Kurboyee Hill	87 26 00
Pulo Pahgaugo	Pungalauren Hill	21 14 45

For the TIME *and* LONGITUDE *of*

Pulo PAHGAUGO.

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Error of Sextant.	Comparison of the Chronometers with 397.	Remarks.
	°	*h.* ′ ″	′ — ″	*h.* ′ ″	
Sept. 19	113 U. L.	8 27 10	0· 44	397. 8 40 00	
	113 L. L.	8 29 18	0· 44	391. 7 55 04·5	
	115 U. L.	8 31 09	0· 44	44 55·5	
	115 L. L.	8 33 17	0· 44		
	117 U. L.	8 35 10	0· 44		
	117 L. L.	8 37 18	0· 44		

Pulo PAHGAUGO.

between	*and*	ANGLES. ° ′ ″
Pulo Telloor	Pungalauren	105 54 50

At NATTAL.

OBSERVATIONS

for the LATITUDE.

1822 Month.	Stars Observed.	Double Meridian Altitude.	Error of Sextant.	Height of the Therm.	Height of the Barom.	Remarks.
		° ′ ″	′ — ″			
Oct. 9	α Pavonis	64 19 50 S.	0· 50			
	γ Cygni	101 47 10 N.	0· 50			
	α Cygni	91 48 20	0· 50			
	γ Gruis	102 30 10 S.	0· 50			
	α Gruis	83 18 15	0· 50			
	β Gruis	83 18 20	0· 50			
	η Pegasi	122 30 50 N.	0· 50			
	Fomalhaut	117 49 10 S.	0· 50			
	β Pegasi	126 54 15 N.	0 50			
	α Andromeda	124 55 20	0· 50			
	α Phœnicis	92 24 05 S.	0· 50			

For the Time and Longitude of

Nattal Station.

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 397.	Remarks.
	°	h. ' "	h. ' "	h. ' "	
Oct. 9	100 U. L.....	7 58 59	1 17 12	397. 10 40 00	
	100 L. L.....	8 01 09	1 15 02	391. 9 51 49	
	102 U. L.....	8 03 02	1 13 09	48 11	
	102 L. L.....	8 05 13	1 10 58·5		
	104 U. L.....	8 07 08	1 09 04		
	104 L. L.....	8 09 18	1 06 54		
	106 U. L.....	8 11 10·5	1 05 01·5		
	106 L. L.....	8 13 23	1 02 51·5		

For the Time and Longitude of
Nattal Hill.

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Forenoon.	Error of Sextant.	Comparison of the Chronometers with 397.	Remarks.
	°	h. ' "	' — "		
Oct. 10	92 U. L.....	7 42 32	0· 50		
	92 L. L.....	7 44 42	0· 50		
	94 U. L.....	7 46 35	0· 50		
	94 L. L.....	7 48 45	0· 50		
	96 U. L.....	7 50 38·5	0· 50		
	96 L. L.....	7 52 49	0· 50		

For the Time and Longitude
of
Ayer Bonghy.

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 397. Afternoon.	Error of Sextant.	Comparison of the Chronometers with 397.	Remarks:
	°	h. ' "	' — "		
Oct. 16	90 U. L.....	1 31 39	0· 45		Ayer Bonghy Station about 30 yards North of the Flag Staff.
	90 L. L.....	1 33 51	0· 45		
	88 U. L.....	1 35 47	0· 45		
	88 L. L.....	1 37 58	0· 45		
	86 U. L.....	1 39 51·5	0· 45		
	86 L. L.....	1 42 02·5	0· 45		

At Ayer Bonghy.

between	*and*	Angles. ° ' "
Lubwaun Hill.....	Pulo Panjong Station.....	74 34 20
	Pulo Panjong Hill.....	80 10 30
	Pungalauren Hill.....	58 46 30
	Tooleechemanah Hill.....	61 05 10
	Battoo Bullyer Point.....	67 16 50

At Pulo PINNEE—*South East Extremity.*

OBSERVATIONS

for the LATITUDE.

1822 Month.	Names.	Double Meridian Altitude.	Error of Sextant.	Remarks.
		° ′ ″	′ ″	
Dec. 12	Achernar.....	63 37 20 s.	0: 56	
	β Persei.....	99 40 20 N.	0· 56	
15	Sun's L. L.....	132 48 40 s.	0· 58	
18	Achernar.....	63 37 15	0· 50	
	α Arietis.....	134 57 00 N.	0· 50	
19	Sun's L. L.....	132 28 55 s.	0· 50	
	Achernar.....	63 37 25	0· 50	
	α Persei.....	81 47 05 N.	0· 50	

For the TIME, LONGITUDE *and* RATES *of*

CHRONOMETERS.

1822 Month.	Double Altitudes of the Sun.	Times by Chron. Earnshaw. Forenoon.	Afternoon.	Comparison of the Chronometers with Earnshaw.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
Dec. 14	98 U. L.....	8 55 45	1 36 42	*Earn.* 11 16 14	
	98 L. L.....	8 58 30	1 33 58	391. 9 45 05	
	100 U. L.....	9 00 48	1 31 39	1 31 09	
	103 U. L.....	9 08 27	1 23 59 5		
	103 L. L.....	9 11 15	1 21 12		
	105 U. L.....	9 13 38	1 18 49		
15	98 U. L.....	8 56 41	1 37 18	*Earn.* 11 17 00	
	98 L. L.....	8 59 23	1 34 35 5	391. 9 45 26	
	100 U. L.....	9 01 41·5	1 32 16·5	1 31 34	
	100 L. L.....	9 04 27·5	1 29 31·5		
	102 U. L.....	9 06 48	1 27 10 5		
	102 L. L.....	9 09 34·5	1 24 24		
	104 U. L.....	9 11 57·5	1 22 00.5		
	104 L. L.....	9 14 46·5	1 19 12·5		
		Time by Chronometer 391		*with* 391	
19	104 U. L.....	7 41 51·5	11 50 55	391. 9 46 24	
	104 L. L.....	7 44 43·5	11 48 04	*Earn.* 11 19 46	
	106 U. L.....	7 47 09	11 45 38 5	1 33 22	
	106 L. L.....	7 50 01·5	11 42 44		
	108 U. L.....	7 52 29	11 40 17 5		
	108 L. L.....	7 55 27	11 37 19		
	110 U. L.....	7 57 58	11 34 48·5		
	110 L. L.....	8 00 58 5	11 31 47		

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 391. Forenoon.	Afternoon.	Comparison of the Chronometers with 391.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
Dec. 20	98 U. L.....	7 26 53	12 06 32	391. 9 46 42	
	98 L. L.....	7 29 37	12 03 47	*Eran.* 11 20 29	
	100 U. L.....	7 31 54·5	12 01 28·5	1 33 47	
	100 L. L.....	7 34 42	11 58 43		
	102 U. L.....	7 37 03	11 56 21		
	102 L. L.....	7 39 50 5	11 53 32 5		
	104 U. L.....	7 42 14	11 51 10		
	104 L. L.....	7 45 05	11 48 19		

For the Bearing of Pulo GAUNSAH *Lout and the Variation of the Compass.*

1822 Month.	Times by Chronometer 391.	Angle between the Sun's nearest Limb and Pulo *Gaunsah Lout.*	Error of Sextant.	Remarks.
	h. ′ ″	° ′ ″	′ — ″	
Dec. 19	3 42 13 P M.	124 01 15	0· 50	
20	3 43 57	123 49 30	0· 50	

At Pulo PINNEE*—South East Extremity.*

between	*and*	Angles. ° ′ ″
Pulo *Gaunsah Lout*.....	Pulo Gaunsah.....	11 08 42
	Pulo Oolur.....	43 52 30
	Kurboyee Hill.....	41 22 40
	Mount Ophir.....	32 34 50
	Tooleechemanah Hill.....	53 03 28
	Lubwaun Looloo.....	58 52 00
	Pungalauren Hill.....	49 29 50
	Oojong Taun Hill.....	63 13 18
	Nellang Hill.....	76 06 40
	Peak N. E. of Ayer Bonghy.....	58 52 35
	Second Peak on the Range.....	72 30 30
	Teekoo Hill or Massang.....	15 06 35
Elevation of Mount Ophir.....		0 55 50
Elevation of *Remarkable Hill* N. E. of *Nattal*.....		0 59 40

AT

Pulo GAUNSAH LOUT,

108,78 *Seconds*

North of the Equator.

Experiments for ascertaining
The Length of the Pendulum.

1823. 15th February A. M.

Hygro. Begin 5 *moist.* End 3 *moist.* — Barom. Begin 30,235 End 30,215 *Inches.*

Temperature.	Disc. Hid. h ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
81·5	10 08 20	10 08 32	1,290
	10 19 56	10 20 07	1,20
82·5	10 31 29·5	10 31 42·5	1,11
	10 43 07	10 43 21·5	1,05
83·5	10 54 44	10 54 56 5	0,98

Hygro. Begin 3 *moist.* End 12 *dry.* — Barom. Begin 30,215 End 30,211

84	11 01 27	11 01 37	1,335
	11 12 58	11 13 08·5	1,26
86	11 24 28	11 24 38	1,175
	11 35 58	11 36 07 5	1,080
88 5	11 47 25	11 47 35	1,010

Hyg. Begin 32 *dry.* End 30 *dry.* — Barom. Begin 30,193 End 30,172

94	1 05 03·5	1 05 13	1,298
	1 16 20	1 16 29	1,210
94·5	1 27 37	1 27 47	1,130
	1 38 55	1 39 07	1,06
94·5	1 50 14	1 50 25	0,975

Hygro. Begin 41 *dry.* End 38 *dry.* — Barom. Begin 30,142 End 30,154

93	3 21 37	3 21 48	1,23
	3 32 58	3 33 10	1,150
90·5	3 44 20	3 44 33	1,080
	3 55 46	3 55 58	1,015
88·5	4 07 13	4 07 26	0,950

16th February A. M.

Hygro. Begin 2 *dry.* End 3 *dry.* — Barom. Begin 30,177 End 30,193

82	7 42 54	7 43 06	1,295
	7 54 29	7 54 42	1,220
82	8 06 05	8 06 18	1,15
	8 17 42	8 17 55·5	1,07
82 5	8 29 20	8 29 30	0,985

16th February A. M.

Hygro. Begin 9 *dry.* End 16 *dry.* — Barom. Begin 30,203 End 30,212 *Inches.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
84	10 33 10·5	10 33 22	1,225
	10 44 44	10 44 56	1,140
85	10 56 17	10 56 29	1,070
	11 07 50·5	11 08 03	0,990
87	11 19 22	11 19 33.5	0,910

Hygro. Begin 16 *dry.* End 27 *dry.* — Barom. Begin 30,222 End 30,203

87	11 24 44	11 24 54	1,27
	11 36 10	11 36 19 5	1,175
90·5	11 47 35	11 47 44	1,095
	11 58 56	11 59 06	1,025
93·5	12 10 18·5	12 10 28 5	0,940

Hygro. Begin 40 *dry.* End 46 *dry.* — Barom. Begin 30,172 End 30,153

96	1 29 50	1 30 00·5	1,03
	1 41 05	1 41 16	0,96
97	1 52 22	1 52 34	0,885
	2 03 39	2 03 52	0,825
97·5	2 14 57	2 15 10	0,755

Hygro. Begin 48,5 *dry.* End 44 *dry.* — Barom. Begin 30,132 End 30,144

94·5	3 36 19	3 36 30	1,200
	3 47 38 5	3 47 50	1,125
90 5	3 59 02	3 59 14	1,050
	4 10 28	4 10 41	0,98
89	4 21 53·5	4 22 07	0,915

17th February A. M.

Hygro Begin 3 *dry.* End 3 *dry.* — Barom. Begin 30,132 End 30,152

80·75	6 55 25	6 55 38	1,19
	7 07 05	7 07 18	1,115
80·75	7 18 46	7 19 00	1,035
	7 30 27	7 30 42	0,960
80·5	7 42 11	7 42 24 5	0,890

17*th February* A. M.

Hygro. Begin 6 *dry.* End 8 *dry.* — Barom. Begin 30,174 End 30,173 *Inches.*

Temperature.	Disc. Hid. h. ′ ″	Disc. Reappeared. h. ′ ″	Arc of Vibration
°			
82·5	9 55 58	9 56 09	1,235
	10 07 35 5	10 07 46	1,145
83	10 19 12	10 19 24	1,07
	10 30 48·5	10 31 01 5	0,98
83·5	10 42 27	10 42 39	0,905

Hygro. Begin 8 *dry.* End 15 *dry.* — Barom. Begin 30,173 End 30,173

83·5	10 52 11	10 52 21	1,185
84·25	11 03 45 5	11 03 56 5	1,095
85 3	11 15 19	11 15 30 5	1,02
86	11 26 53	11 27 04	0,95
87	11 38 25	11 38 36	0,88

Hygro. Begin 34 *dry.* End 43 *dry.* — Barom. Begin 30,143 End 30,143

93·5	12 58 49	12 58 59	1,035
94	1 10 08 5	1 10 19	0,960
94 5	1 21 28 5	1 21 39	0,890
95	1 32 46	1 32 58	0,82
94	1 44 08	1 44 20	0,745

Hygro. Begin 42 *dry.* End 38 *dry.* — Barom. Begin 30,103 End 30,103

86 5	3 22 19	3 22 31	1,090
86	3 33 51	3 34 03	1,02
86	3 45 21 5	3 45 34	0,95
85·5	3 56 57	3 57 10·5	0,875
85·5	4 08 32	3 08 46	0,81

18*th February* A. M.

Hygro. Begin 8 *dry.* End 8 *dry.* — Barom. Begin 30,132 End 30,138

79 5	7 46 24	7 46 34 5	1,28
80	7 58 03	7 58 14	1,20
80 5	8 09 43	8 09 54	1,125
80 5	8 21 23·5	8 21 36	1,05
80 75	8 33 05	8 33 18	0,97

18*th February* A. M.

Hygro. Begin 9,5 *dry.* End 11 *dry.* — Barom. Begin 30,151 End 30,154 *Inches.*

Temperature.	Disc. Hid. h. ′ ″	Disc. Reappeared. h. ′ ″	Arc of Vibration
°			
82	9 47 58	9 48 03	1,360
82	9 59 35	9 59 46	1,280
82	10 11 11·5	10 11 22	1,19
82 5	10 22 48	10 22 59	1,095
82 7	10 34 27	10 34 38	1,020

Hygro. Begin 20 *dry.* End 40 *dry.* — Barom. Begin 30,154 End 30,154

87 5	11 48 15	11 48 25	1,29
91	11 59 39	11 59 49	1,20
92 5	12 11 01	12 11 10	1,12
93 5	12 22 24	12 22 34	1,04
94	12 33 44	12 33 53·5	0,97

Hygro. Begin 50 *dry.* End 44 *dry.* — Barom. Begin 30,133 End 30,133

96	1 49 41	1 49 51	1,175
97	2 01 57	2 02 06 5	1,090
97	2 12 13·5	2 12 23	1,015
96 8	2 23 30·5	2 23 40	0,940
96 8	2 34 49	2 34 49	0,870

Hygro. Begin 44 *dry.* End 43 *dry.* — Barom. Begin 30,103 End 30,093

95	4 01 29·5	4 01 39	1,27
94 5	4 12 49	4 12 58 5	1,195
94	4 24 09	4 24 19 5	1,11
93.75	4 35 29	4 35 40 5	1,035
93	4 46 53	4 47 04	0,96

19*th February* A. M.

Hygro. Begin 16 *dry.* End 10 *dry.* — Barom. Begin 30,144 End 30,153

81·5	7 38 40	7 38 52	1,350
81·5	7 50 19	7 50 30	1,275
81·5	8 01 58	8 02 09	1,195
81·75	8 13 35	8 13 46	1,12
82	8 25 13·5	8 25 25	1,04

19th February A. M.

Hygro. Begin 10,5 *dry.* End 14 *dry.* Barom. Begin 30,133 End 30,132 *Inches.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
83	9 52 48	9 52 58 5	1,30
83·5	10 04 24·5	10 04 35	1,215
83·5	10 16 03	10 16 13	1,125
83·75	10 27 40	10 27 51·5	1,04
84	10 39 18	10 39 30	0,96

Hygro. Begin 22 *dry.* End 37 *dry.* Barom. Begin 30,133 End 30,134

90 25	11 45 45	11 45 56	1,305
92	11 57 09	11 57 20	1,225
93 5	12 08 31·5	12 08 42	1,13
94 75	12 19 54	12 20 05	1,05
95·5	12 31 16	12 31 26 5	0,98

Hygro. Begin 41 *dry.* End 44 *dry.* Barom. Begin 30,132 End 30,123

97 5	1 37 21·5	1 37 32	1,275
97·5	1 48 39	1 48 49 5	1,195
97 2	1 59 56	2 00 06	1,11
97	2 11 15	2 11 26	1,025
96	2 22 34	2 22 46	0,95

Hygro. Begin 50 *dry.* End 50 *dry.* Barom. Begin 30,103 End 30,102

91·5	3 34 26	3 34 37	1,265
91·5	3 45 51	3 46 03	1,18
92·25	3 57 16	3 57 29	1,095
92·5	4 08 40 5	4 08 53	1,02
91·5	4 20 07	4 20 19	0,945

Hygro. Begin 50 *dry.* End 46 *dry.* Barom. Begin 30,102 End 30,103

91 5	4 25 38	4 25 49	1,325
89 5	4 37 04	4 37 16	1,25
88 2	4 48 34	4 48 45	1,18
87 5	5 00 05	4 00 17	1,11
87·2	5 11 37	4 11 49	0,94

20th February A. M.

Hygro. Begin 15 *dry.* End 13 *dry.* Barom. Begin 30,133 End 30,112 *Inches.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration.
°			
81	6 41 50	6 42 02	1,125
81	6 53 32	6 53 45	1,05
81	7 05 17·5	7 05 31	0,97
81 2	7 16 59·5	7 17 03	0,89
81·4	7 28 45	7 28 58·5	0,82

Hygro. Begin 14,5 *dry.* End 18,5 *dry.* Barom. Begin 30,142 End 30,153

83	9 54 18	9 54 28·5	1,335
83 5	10 05 55	10 06 06	1,25
83 8	10 17 29	10 17 40	1,175
84	10 29 06	10 29 17	1,085
84·5	10 40 44	10 40 56	0,996

Hygro. Begin 19 *dry.* End 26 *dry.* Barom. Begin 30,153 End 30,154

84 7	10 49 48 5	10 49 59	1,325
85 6	11 01 22	11 01 33	1,24
87 5	11 12 54	11 13 05	1,16
88 5	11 24 24	11 24 36	1,075
89 75	11 35 55 5	11 36 07	1,00

Hygro. Begin 31,5 *dry.* End 42 *dry.* Barom. Begin 30,144 End 30,133

90	12 42 34	12 42 45	1,385
91	12 53 57	12 54 08	1,300
92 5	1 05 22	1 05 33	1,22
93	1 16 48	1 16 58·5	1.13
94	1 28 09·5	1 28 21	1,05

Hygro. Begin 47 *dry.* End 45 *dry.* Barom. Begin 30,113 End 30,113

95·5	3 04 45	3 04 56	1,330
95	3 16 03	3 16 14	1,25
95	3 27 22	3 27 34	1,175
94	3 38 44	3 38 55	1,09
93·5	3 50 07	3 50 18	1,015

22d February A. M.

Hygro. Begin 11 dry — End 13,5 dry

Barom. Begin 30,153 — End 30,158 (Inches.)

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration.
°			
81	7 51 09	7 51 19	1,425
81	8 02 49	8 02 59	1,33
81	8 14 29	8 14 40·5	1,24
81·5	8 26 10 5	8 26 22	1,15
81·5	8 38 54	8 39 06	1,07

Hygro. Begin 15 dry — End 19 dry

Barom. Begin 30·183 — End 30·183

82·5	9 46 09	9 46 20	1,295
82 5	9 57 49 5	9 59 00·5	1,205
82 5	10 09 32	10 09 43	1,12
82·75	10 21 13 5	10 21 25	1,035
83	10 32 55	10 33 07	0,945

Hygro. Begin 25 dry. — End 40 dry.

Barom. Begin 30,163 — End 30,163

88 5	11 40 05	11 40 14	1,33
89	11 51 35	11 51 44	1,23
89·75	12 03 03.5	12 03 13	1,15
91	12 14 31	12 14 41·5	1,07
92	12 25 58	12 26 09	0,98

Hygro. Begin 43 dry. — End 48 dry.

Barom. Begin 30,143 — End 30,143

92 5	1 34 28·5	1 34 38	1,37
94	1 45 51	1 46 00	1,275
95	1 57 11·5	1 57 20	1,18
95·25	2 08 32	2 8 41.5	1,10
95	2 20 53	2 21 03	1,015

Hygro. Begin 58 dry. — End 57 dry.

Barom. Begin 30,093 — End 30,093

93.5	3 44 14	3 44 26	1,195
94	3 55 37	3 55 48	1,12
93	4 07 01	4 07 13	1,04
91	4 18 28	4 18 41	0,97
91	4 29 55	4 30 09	0,90

22d February A. M.

Hygro. Begin 57 dry. — End 49 dry.

Barom. Begin 30,103 — End 30,087 (Inches.)

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
90·5	4 34 16	4 34 27	1,35
89	4 45 44	4 45 55	1,275
88	4 57 14	4 57 26	1,19
87	5 08 47	5 08 59	1,10
86 5	5 20 20 5	5 20 33	1,025

23d February A. M.

Hygro. Begin 16 dry. — End 17 dry.

Barom. Begin 30,093 — End 30,100

80·5	6 32 07	6 32 21	1,325
80·5	6 43 49	6 44 02	1,23
80·5	6 55 31	6 55 44	1,14
80·5	7 07 15	7 07 28	1,05
80·5	7 18 58	7 19 12	0,98

Hygro Begin 19 dry. — End 21 dry.

Barom. Begin 30,153 — End 30,153

83	9 44 07	9 44 18	1,275
83	9 55 46	9 55 57	1,18
83	10 07 26	10 07 37	1,09
83·5	10 19 07	10 19 18	1,00
84	10 31 49	10 32 00	0,925

Hygro. Begin 21 dry. — End 28 dry.

Barom. Begin 30,153 — End 30,153

84	10 34 52	10 35 02	1,28
84·2	10 46 28	10 46 39 5	1,19
85	10 58 06	10 58 18	1,095
86	11 09 45	11 09 56	1,000
87	11 21 21	11 21 33	0,925

Hygro. Begin 43 dry. — End 50 dry.

Barom. Begin 30,115 — End 30,113

92	12 26 50	12 27 00	1,34
92 5	12 38 15	12 38 24	1,245
93·5	12 49 39·5	12 49 49	1,15
95	1 01 02	1 01 12	1,075
96	1 12 26 5	1 12 37	1,00

23d February A. M.

Hygro. Begin 55 *dry.* End 53 *dry.* — Barom. Begin 30,063 End 30,063 *Inches.*

Temperature.	Disc. Hid.	Disc. Reappeared.	Arc of Vibration
°	h. ′ ″	h. ′ ″	
95	3 08 15	3 08 24 5	1,31
95	3 19 34	3 19 44	1,22
95	3 30 55	3 31 05	1,14
95	3 42 14	3 42 26	1,056
92·5	3 53 38	3 53 51	0,99

24th February A. M.

Hygro. Begin 20 *dry.* End 23 *dry.* — Barom. Begin 30,084 End 30,095

82	7 33 24	7 33 35	1,325
82 6	7 45 05	7 45 16	1,23
83	7 56 47	7 56 59	1,14
83	8 08 31	8 08 43	1,05
83	8 20 16	8 20 29	0,975

Hygro. Begin 28 *dry.* End 28 *dry.* — Barom. Begin 30,113 End 30,145

83 5	9 43 39	9 43 51	1,275
83 75	9 55 19·5	9 55 32	1,175
83·75	10 07 00	10 07 12	1,09
84	10 18 41	10 18 54	1,005
84	10 30 25	10 30 37	0,925

Hygro. Begin 34 *dry.* End 45 *dry.* — Barom. Begin 30,113 End 30,088

89 75	11 50 54	11 51 04	1,299
91	12 02 27	12 02 36	1,197
91·5	12 14 00	12 14 10	1,099
92	12 25 34	12 25 45	0,995
92	12 37 06	12 37 17	0,90

Hygro. Begin 57 *dry.* End 55 *dry.* — Barom. Begin 30,073 End 30,063

98	1 43 25	1 43 34	1,37
98	1 54 43	1 54 52	1,25
98	2 05 59	2 06 09	1,16
97·5	2 17 19	2 17 29	1,075
97 5	2 28 40	2 28 50	1,00

24th February A. M.

Hygro. Begin 58 *dry.* End 56 *dry.* — Barom. Begin 30,044 End 30,033 *Inches.*

Temperature.	Disc. Hid.	Disc. Reappeared.	Arc of Vibration.
°	h. ′ ″	h. ′ ″	
95	3 49 38	3 49 50	1,26
94 5	4 01 00	4 01 13	1,16
94	4 12 25	4 12 38	1,09
93	4 23 49	4 24 03	1,01
92	4 35 17	4 35 31	0,94

Hygro. Begin 56 *dry.* End 54 *dry.* — Barom. Begin 30,033 End 30,044

92	4 39 40	4 39 52	1,30
90	4 51 07	4 51 20	1,22
88	5 02 37	5 02 50	1,15
87	5 14 09	5 14 22	1,075
86·5	5 25 44	5 25 58	1,005

25th February A. M.

Hygro. Begin 8 *dry.* End 1 *dry.* — Barom. Begin 30,075 End 30,095

78·5	7 20 42	7 20 55	1,45
78·5	7 32 37	7 32 39	1,35
78·5	7 44 12	7 44 24	1,26
79	7 56 58	7 56 10	1,175
79	8 07 45	8 07 58	1,095

Hygro. Begin 1 *dry* End 2 *dry.* — Barom. Begin 30,097 End 30,113

79.5	9 15 52	9 16 03	1,25
79.5	9 27 40 5	9 27 52	1,125
79 5	9 39 27	9 39 39	1,025
79 5	9 51 13	9 51 26	0,94
79.75	10 03 00	10 03 14	0,87

Hygro. Begin 1 *moist* End 12 *dry* — Barom. Begin 30,124 End 30,093

82	11 15 44	11 15 56	1,505
83	11 27 27	11 27 38	1,40
83	11 39 07	11 39 18	1,29
83	11 50 48	11 50 58	1,175
83	12 02 30	11 02 41	1,045

25th February A. M.

Hygro. Begin 23 *dry.* End 29 *dry.* — Barom. Begin 30,053 End 30,053 *Inches.*

Temperature.	Disc. Hid.	Disc. Reappeared.	Arc of Vibration
°	h. ′ ″	h. ′ ″	
86·5	1 20 55	1 21 05·5	1,225
88·5	1 32 27	1 32 38	1,13
89	1 43 59	1 44 10	1,05
89·5	1 55 30	1 55 41	0,98
90	2 07 03	1 07 15	0,905

Hygro. Begin 38 *dry.* End 40 *dry.* — Barom. Begin 30,038 End 30,023

90	3 14 50	3 15 00	1,405
90·5	3 26 19	3 26 28·5	1,30
90·75	3 37 44·5	3 38 05	1,215
90·5	3 49 11·5	3 49 22·5	1,13
90	4 00 40.5	4 00 52·5	1,065

26th February A. M.

Hygro. Begin 8 *dry.* End 12 *dry.* — Barom. Begin 30,038 End 30,043

81	7 26 50	7 27 00	1,43
81·5	7 38 29	7 38 40	1,325
81·75	7 50 09·5	7 50 20	1,23
82	8 01 52	8 02 03·5	1,14
82	8 13 35	8 13 47·5	1,055

Hygro. Begin 15 *dry.* End 18 *dry.* — Barom. Begin 30,046 End 30,046

83	9 45 29	9 45 39·5	1,30
83	9 57 10	9 57 22	1,19
83	10 09 51	10 10 04	1,095
83·2	10 20 32	10 20 45	1,005
83·5	10 32 15	10 32 27	0,925

Hygro. Begin 28 *dry.* End 40 *dry.* — Barom. Begin 30,043 End 30,052

88	11 42 59	11 43 08	1,40
89	11 54 27	11 54 36	1,295
89·75	12 05 55·5	12 06 05·5	1,2
90	12 17 25	12 17 34·5	1,105
90·25	12 28 52	12 29 03	1,025

26th February A. M.

Hygro. Begin 52 *dry.* End 56 *dry.* — Barom. Begin 30,035 End 30,022 *Inches.*

Temperature.	Disc. Hid.	Disc. Reappeared.	Arc of Vibration
°	h. ′ ″	h. ′ ″	
95	1 35 50	1 35 58	1,505
95	1 47 07	1 47 15	1,4
95·75	1 58 24	1 58 33·5	1,31
96	2 09 42·5	2 09 53	1,217
96	2 21 03	2 21 12	1,135

Hygro. Begin 58 *dry.* End 56 *dry.* — Barom. Begin 30,016 End 30,008

95·5	3 33 28·5	3 33 38	1,45
94·25	3 44 47	3 44 57	1,35
94	3 56 06·5	3 56 17·5	1,255
92·75	4 07 29	4 07 40	1,175
92	4 19 51·5	4 20 04	1,100

Hygro. Begin 56 *dry.* End 52 *dry.* — Barom. Begin 30,008 End 30,003

92	4 21 18	4 21 29	1,325
91	4 32 42	4 32 53	1,225
90	4 44 06	4 44 19	1,145
88	4 55 35	4 55 48	1,085
87	5 07 07	5 07 20	1,025

1st March A. M.

Hygro. Begin 3 *moist.* End 00 *moist.* — Barom. Begin 30,048 End 30,053

80·5	7 51 14·5	7 51 26·5	1,275
80·5	8 02 59	8 03 12	1,150
80·5	8 14 45	8 14 58	1,050
80·5	8 26 32	8 26 45	0,970
80·75	8 38 17·5	8 38 31	0,90

Hygro. Begin 1 *dry.* End 4 *dry.* — Barom. Begin 30,053 End 30,053

81·75	9 53 34	9 53 45	1,295
81·75	10 05 16	10 05 26	1,198
81·8	10 16 57	10 17 08	1,105
82	10 28 39·5	10 28 51	1,030
82	10 40 21·5	10 40 33	0,965

1st March A. M.

Hygro. Begin 21 dry. End 37 dry. Barom. Begin 30,051 End 30,028 (Inches.)

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration.
°			
86	11 53 11	11 53 20	1,255
88·5	12 04 43	12 04 52·5	1,16
90	12 16 14·5	12 16 24	1,08
91	12 27 45·5	12 27 55	1,01
92	12 39 15·5	12 39 26	0,94

Hygro. Begin 51 dry. End 52 dry. Barom. Begin 30,024 End 30,018

94	1 47 08	1 47 17	1,325
94·75	1 58 30	1 58 40	1,225
94·2	2 09 53	2 10 03	1,14
94	2 21 16·5	2 21 26	1,065
94	2 32 39	2 32 49	0,997

Hygro. Begin 53 dry. End 52 dry. Barom. Begin 30,013 End 30,009

94	3 57 18·5	3 57 28	1,425
93·5	4 08 41	4 08 51	1,32
93	4 20 05	4 20 15	1,23
92·25	4 31 29·5	4 31 41·5	1,14
92	4 42 56	4 43 08	0,96

Hygro. Begin 52 dry. End 50 dry. Barom. Begin 30,009 End 30,003

91·5	4 56 53	4 57 04	1,30
90·1	5 08 20	5 08 31·5	1,20
89	5 19 49	5 20 01·5	1,115
88	5 31 20	5 31 33	1·04
87·5	5 42 55·5	5 43 09	0·99

3d March A. M.

Hygro. Begin 29 moist. End 29 moist. Barom. Begin 30,053 End 30,048

76	7 09 20	7 09 32	1,355
76	7 21 05	7 21 17·5	1,255
76	7 32 48·5	7 33 01	1,170
76·5	7 44 35	7 44 47	1,100
76·5	7 56 20	7 56 33	1,025

3d March A. M.

Hygro. Begin 27 moist. End 25 moist. Barom. Begin 30,082 End 30,098 (Inches.)

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
79	9 44 50	9 45 01	1,325
79	9 55 31	9 55 42	1,215
79·3	10 07 13·5	10 07 27	1,12
79·5	10 18 58·5	10 19 10	1,035
79·8	10 30 41·5	10 30 54	0,95

Hygro. Begin 6 dry. End 14 dry. Barom. Begin 30,073 End 30,073

84·5	11 59 03	11 59 13	1,275
85	12 10 39	12 10 49	1,185
85·3	12 22 16	12 22 26	1,10
85·5	12 33 52	12 34 02·5	1,025
85·5	12 45 30	12 45 41	0,95

Hygro. Begin 24 dry. End 30 dry. Barom. Begin 30,033 End 30,018

85·5	1 57 06	1 57 15	1,25
87·75	2 08 43	2 08 52	1,155
88	2 20 17	2 20 27	1,065
88	2 31 54	2 32 04	0,975
88·2	2 43 30	2 43 41	0,905

Hygro. Begin 38 dry. End 36 dry. Barom. Begin 30,013 End 30,013

89·5	4 05 34	4 05 43·5	1,32
89·5	4 17 02	4 17 12	1,215
89	4 28 30	4 28 40	1,13
88	4 40 00	4 40 11	1,060
87·5	4 51 30	4 51 42	0,995

4th March A. M.

Hygro. Begin 32 moist. End 30 moist. Barom. Begin 30,058 End 30,073

80·5	9 52 53	9 53 03	1,305
80·5	10 04 35·5	10 04 45·5	1,20
81	10 16 16·5	10 16 28	1,11
81·25	10 28 03	10 28 14·5	1,025
82	10 39 47·5	10 39 59	0,96

4th March A. M.

Hygro. Begin 20 *moist.* End 14 *moist.* — Barom. Begin 30,072 End 30,043 *Inches.*

Temperature.	Disc. Hid. h. ′ ″	Disc. Reappeared. h. ′ ″	Arc of Vibration
°			
85	11 51 52	11 52 00	1,46
84	12 03 29	12 03 38	1,345
84	12 15 04	12 15 13	1,25
83·8	12 26 41·5	12 26 52	1,165
83·8	12 38 21	12 38 31	1,09

Hygro. Begin 13 *moist.* End 10 *moist.* — Barom. Begin 30,038 End 30,038

84	12 56 13	12 56 23	1,385
83	1 07 50	1 08 00	1,28
82·2	1 19 29	1 19 40	1,195
83·5	1 31 09·5	1 31 20	1,107
86	1 42 49	1 42 59	1,025

Hygro. Begin 6,5 *dry.* End 5 *dry.* — Barom. Begin 30,016 End 30,008

83·5	3 17 16	3 17 25	1,415
83	3 28 53	3 29 02	1,31
83	3 40 28	3 40 38 5	1,225
82·8	3 52 07	3 52 17	1,15
82·5	4 03 45·5	4 03 56	1,075

9th March A. M.

Hygro. Begin 3 *moist.* End 1 *dry.* — Barom. Begin 30,148 End 30,153

81	7 40 07	7 40 16	1,345
81	7 51 50	7 51 59	1,23
81 5	8 03 34	8 03 43·5	1,125
81·8	8 15 18·5	8 15 28	1,045
81·9	8 27 03	8 27 14	0,975

Hygro. Begin 11 *dry.* End 10·5 *dry.* — Barom. Begin 30,153 End 30,158

82	9 51 03	9 51 12	1,34
82	10 02 46	10 02 55	1,23
82.1	10 14 28	10 14 38	1,125
83	10 26 10	10 26 20	1,05
83 2	10 37 52·5	10 38 03	0,98

9th March A. M.

Hygro. Begin 16 *dry.* End 16 *dry.* — Barom. Begin 30,133 End 30,113 *Inches.*

Temperature.	Disc. Hid. h. ′ ″	Disc. Reappeared. h. ′ ″	Arc of Vibration
°			
82·5	11 52 36	11 52 45·5	1,40
82·2	12 04 16	12 04 25·5	1,295
82·2	12 15 57·5	12 16 07	1,20
82	12 27 39	12 27 49	1,11
82	12 39 23	12 39 33	1,03

Hygro. Begin 20 *dry.* End 21 *dry.* — Barom. Begin 30,083 End 30,080

84 5	1 54 11	1 54 20	1,345
84·5	2 05 51	2 06 00	1,24
84	2 17 30·5	2 17 40	1,13
84	2 29 14	2 29 24	1,035
84	2 40 57	2 41 08	0,95

Hygro. Begin 24 *dry.* End 22 *dry.* — Barom. Begin 30,083 End 30,078

84	3 51 46	3 51 56	1,315
83·5	4 03 25	4 03 35	1,205
83·5	4 15 06	4 15 16	1,12
83	4 26 49	4 26 59	1,04
83	4 38 34	4 38 44	0,97

10th March A. M.

Hygro. Begin 5 *moist.* End 7,5 *moist.* — Barom. Begin 30,118 End 30,123

80	6 21 34	6 21 45	1,40
80	6 33 16	6 33 27	1,295
80	6 45 00	6 45 11	1,20
80·3	6 56 44	6 56 55 5	1,11
80 8	7 08 27	7 08 39	1,03

Hygro. Begin 2 *dry.* End 5 *dry.* — Barom. Begin 30,157 End 30,157

81·8	9 57 11	9 57 20	1,310
82	10 08 53	10 09 03	1,20
82 2	10 20 38	10 20 48	1,105
82,8	10 32 23	10 32 33	1,025
83	10 44 09	10 44 19 5	0,95

10*th March* A. M.

Hygro. Begin 6 *dry.* End 11 *dry.* — Barom. Begin 30,157 End 30,148 *Inches.*

Temperature.	Disc. Hid.			Disc. Reappeared.			Arc of Vibration
°	h.	'	"	h.	'	"	
83·5	10	57	29 5	10	57	38·5	1,28
83·8	11	09	13	11	09	22	1,18
84	11	20	57	11	21	06	1,09
84	11	32	41	11	32	51·5	1,005
84	11	44	27	11	44	38	0,925

Hygro. Begin 24 *dry.* End 26 *dry* — Barom. Begin 30,138 End 30,123

88	12	57	41	12	57	50	1,40
87·3	1	09	15·5	1	09	24	1,30
87 5	1	20	50·5	1	20	59·5	1,20
87·3	1	32	28	1	32	37	1,10
87·1	1	44	06	1	44	15 5	1,01

Hygro. Begin 22 *dry.* End 21 *dry.* — Barom. Begin 30,078 End 30,063

89 3	3	11	44 5	3	11	53	1,355
89·5	3	23	15 5	3	23	25	1,25
90	3	34	46 5	3	34	56	1,15
89·3	3	46	19	3	46	29	1,06
89·2	3	57	52	3	58	03	0,99

12*th March* A. M.

Hygro. Begin 12 *moist.* End 12 *moist.* — Barom. Begin 30,068 End 30,083

79 5	6	33	40	6	33	50	1,275
80	6	45	23	6	45	33	1,18
80 2	6	57	09 5	6	57	20	1,10
80 8	7	08	55	7	09	06	1,025
81	7	20	41	7	20	52 5	0,96

Hygro. Begin 10 *moist.* End 5 *moist.* — Barom. Begin 30,123 End 30,125

82	9	41	49·5	9	41	59	1,32
82	9	53	31·5	9	53	41	1,215
82·5	10	05	15	10	05	24 5	1,12
83	10	16	58	10	17	08	1,035
83 2	10	28	43 5	10	28	53·5	0,96

12*th March* A. M.

Hygro. Begin 5 *moist.* End 2 *dry.* — Barom. Begin 30,125 End 30,103 *Inches.*

Temperature.	Disc. Hid.			Disc. Reappeared.			Arc of Vibration.
°	h.	'	"	h.	'	"	
83·8	10	32	25	10	32	34	1,405
84·2	10	44	05	10	44	14	1,3
85	10	55	44·5	10	55	53 5	1,2
85·3	11	07	25	11	07	34	1,1
85·5	11	19	05	11	19	14 5	1,01

Hygro. Begin 2 *dry.* End 1 *dry.* — Barom. Begin 30,083 End 30,073

83·5	1	33	25	1	33	34	1,42
85·5	1	45	02	1	45	11	1,305
85 5	1	56	37	1	56	46·5	1,205
86·2	2	08	15	2	08	24·5	1,11
87·2	2	19	51·5	2	20	01·5	1,03

Hygro. Begin 3 *dry.* End 4 *dry.* — Barom Begin 30,076 End 30,068

87·3	2	32	54·5	2	33	03	1,28
87	2	44	29·5	2	44	38 5	1,19
86 3	2	56	05	2	56	14	1,105
85 7	3	07	41·5	3	07	51 5	1,025
86	3	19	19	3	19	29	0,955

13*th March* A. M.

Hygro. Begin 25 *moist.* End 24 *moist.* — Barom. Begin 30,093 End 30,103

80	7	30	25	7	30	34	1,50
80·5	7	42	04	7	42	13	1,40
81	7	53	43	7	53	52·5	1,3
81	8	05	24	8	05	34	1,2
81·3	8	17	07	8	17	17 5	1,105

Hygro. Begin 21 *moist.* End 15 *moist.* — Barom. Begin 30,129 End 30,133

82·2	9	50	20 5	9	50	29 5	1,4
82 5	10	02	00	10	02	09	1,3
82·8	10	13	40 5	10	13	50	1,2
83	10	25	21·5	10	25	31·5	1,115
84	10	37	03	10	37	14	1,03

13th March A. M.

Hygro. Begin 10 *dry* — End 25 *dry*

Barom. Begin 30,128 — End 30,123 *Inches.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration.
°			
90	11 53 29	11 53 37	1,44
91	12 04 58	12 05 06	1,325
90 5	12 16 27.5	12 16 36	1,22
91·2	12 27 57 5	12 28 6	1,125
92·5	12 39 27	12 39 36	1,04

Hygro. Begin 44 *dry* — End 45 *dry*

Barom. Begin 30·103 — End 30·093

95	1 44 39	1 44 47	1,40
95	1 55 59	1 56 07·5	1,30
95	2 07 20·5	2 07 29	1,205
94 9	2 18 44	2 18 53	1,115
94·8	2 30 07	2 30 17	1,035

Hygro. Begin 50 *dry.* — End 47 *dry.*

Barom. Begin 30,083 — End 30,078

94·9	3 43 09	3 43 18	1,39
93 7	3 54 31·5	3 54 40·5	1,29
93	4 05 55	4 06 04	1,20
92·8	4 17 21	4 17 30 5	1,12
92·2	4 28 46	4 28 56	1,05

14th March A. M.

Hygro. Begin 4 *moist.* — End 4 *moist.*

Barom. Begin 30,078 — End 30,093

80·4	6 22 22	6 22 32	1,40
80·4	6 34 05	6 34 15	1,3
80·8	6 45 48	6 45 58·5	1,2
81	6 57 33	6 57 44	1,11
81 7	7 09 19	7 09 30·5	1,025

Hygro. Begin 5 *moist.* — End 3 *moist.*

Barom. Begin 30,133 — End 30,133

82·8	9 37 16	9 37 25	1,42
83	9 48 57	9 49 05·5	1,31
83·1	10 00 38	10 00 48	1,20
83 5	10 12 21	10 12 31	1,115
84	10 24 04	10 24 15	1,025

14th March A. M.

Hygro. Begin 3 *moist.* — End 3 *dry.*

Barom. Begin 30,133 — End 30,133 *Inches.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
84	10 27 34 5	10 27 43	1,435
84 7	10 39 13	10 39 22	1,33
85·8	10 50 52	10 51 01	1,225
87	11 2 30·5	11 02 40	1,135
89	11 14 09	11 14 18	1,055

Hygro. Begin 38 *dry.* — End 50 *dry.*

Barom. Begin 30,103 — End 30,103

96	1 25 19·5	1 25 27 5	1,45
97	1 36 40	1 36 48	1,34
97	1 48 00·5	1 48 09	1,24
97·4	1 59 22	1 59 31	1,15
96·4	2 10 44·5	2 10 54·5	1,07

Hygro. Begin 50 *dry.* — End 52 *dry.*

Barom. Begin 30,093 — End 30,076

96·3	2 14 52	2 15 00·5	1,4
95	2 26 15	2 26 24	1,3
96	2 37 37	2 37 46	1,21
96·2	2 49 01	2 49 10·5	1,125
96·5	3 00 25	3 00 34 5	1,05

Hygro Begin 52 *dry.* — End 44 *dry.*

Barom. Begin 30,076 — End 30,068

96·5	3 03 35	3 03 44	1,425
96	3 14 55	3 15 04·5	1,325
95 8	3 26 17	3 26 27	1,235
95·4	3 37 41	3 37 51	1,150
95·1	3 49 06	3 49 16.5	1,08

16th March A. M.

Hygro. Begin 36 *moist.* — End 35 *moist.*

Barom. Begin 30,139 — End 30,143

76·7	7 12 22	7 12 31·5	1,48
77	7 24 08·5	7 24 18·5	1,37
77	7 35 56	7 36 06	1,27
77·2	7 47 44	7 47 54	1,18
77·5	7 59 33	7 59 44	1,10

16th March A. M.

Hygro. Begin 33 moist. End 32 moist. Barom. Begin 30,161 End 30,172 Inches.

Temperature.	Disc. Hid.	Disc. Reappeared.	Arc of Vibration.
°	h. ' "	h. ' "	
79·4	9 35 24·5	9 35 34	1,47
80	9 47 07	9 47 17	1,36
80·1	9 58 52	9 59 02	1,25
80·2	10 10 37	10 10 47	1,15
80·5	10 22 23	10 22 34	1,07

Hygro. Begin 17 moist. End 1 moist. Barom. Begin 30,173 End 30,155

84	11 36 16	11 36 25	1,41
84·5	11 47 54·5	11 48 03·5	1,31
85	11 59 35	11 59 44·5	1,2
85	12 11 15	12 11 25·5	1,105
85	12 22 59	12 23 09	1,015

Hygro. Begin 5 dry. End 12 dry. Barom. Begin 30,123 End 30,118

84	1 35 55	1 36 04	1,4
84·5	1 47 29·5	1 47 38·5	1,295
85	1 59 05	1 59 14·5	1,2
85	2 10 39	2 10 49	1,11
86·2	2 22 16	2 22 26	1,025

Hygro. Begin 18 dry. End 27 dry. Barom. Begin 30,116 End 30,110

89·2	2 33 59	2 34 08	1,42
89·7	2 45 29·5	2 45 39	1,315
90	2 57 01	2 57 10·5	1,215
90	3 08 33	3 08 42·5	1,12
90·1	3 20 05	3 20 15	1,035

18th March A. M.

Hygro. Begin 7 dry. End 2 dry. Barom. Begin 30,055 End 30,063

80·5	6 50 44·5	6 50 54	1,41
81	7 02 29	7 02 39	1,30
81·3	7 14 16	7 14 26	1,20
81·6	7 26 03	7 26 13	1,10
81·9	7 37 51·5	7 38 02·5	1,105

18th March A. M.

Hygro. Begin 1 dry. End 1 dry. Barom. Begin 30,055 End 30,063 Inches.

Temperature.	Disc. Hid.	Disc. Reappeared.	Arc of Vibration.
°	h. ' "	h. ' "	
83·5	9 15 04·5	9 15 13·5	1,425
83·2	9 26 44	9 26 54	1,31
83	9 38 27	9 38 37	1,22
83	9 50 11·5	9 50 22	1,13
83·3	10 01 57	10 02 08	1,035

Hygro. Begin 7 dry. End 24 dry. Barom. Begin 30,078 End 30,075

89·5	11 16 52	11 16 59·5	1,40
91	11 28 23·5	11 28 32	1,30
92·5	11 39 54	11 40 03	1,20
93·7	11 51 26	11 51 35	1,105
94·4	12 03 54·5	12 04 04·5	1,025

Hygro. Begin 40 dry. End 45 dry. Barom. Begin 30,065 End 30,043

96·5	1 02 37	1 02 46	1,405
97	1 13 59	1 14 08	1,30
97·2	1 25 21	1 25 30	1,20
96·1	1 36 44	1 36 53	1,105
96	1 48 10	1 48 19·5	1,025

Hygro. Begin 46 dry. End 47 dry. Barom. Begin 30,043 End 30,038

95·5	1 58 08	1 58 16	1,45
94·4	2 09 28·5	2 09 36·5	1,35
94	2 20 52·5	2 21 01	1,26
94·5	2 32 16	2 32 25	1,175
94·5	2 43 40	2 43 49·5	1,09

19th March A. M.

Hygro. Begin 10 moist. End 12 moist. Barom. Begin 30,061 End 30,063

80·5	7 25 39	7 25 48·5	1,425
80	7 37 34	7 37 34	1,325
79·8	7 49 10	7 49 20	1,23
79·9	8 00 57	8 01 07	1,14
80	8 12 46	8 12 56·5	1,06

19th March A. M.

Hygro. Begin 19 *moist.* End 16 *moist.* Barom. Begin 30,081 End 30,083 *Inches.*

Temperature.	Disc. Hid.			Disc. Reappeared.			Arc of Vibration.
°	*h.*	′	″	*h.*	′	″	
81 9	9	37	36	9	37	45	1,405
82	9	49	19	9	49	28 5	1,3
82	10	01	04	10	01	14	1,205
82·1	10	12	49	10	12	59·5	1,11
82 9	10	24	35	10	24	46	1,025

Hygro. Begin 7 *moist.* End 14 *dry.* Barom. Begin 30,073 End 30,065

88 5	11	39	03	11	39	11·5	1,375
89 7	11	50	37	11	50	45·5	1,275
90·1	12	02	11·5	12	02	20	1,18
90 2	12	13	46 5	12	13	55 5	1,09
91·1	12	25	20·5	12	25	29·5	1,01

Hygro. Begin 29 *dry.* End 40 *dry.* Barom. Begin 30,046 End 30,035

94 5	1	37	50·5	1	37	58	1,38
95 7	1	49	14 5	1	49	22	1,28
96	2	00	39	2	00	47·5	1,19
95 9	2	12	02·5	2	12	11·5	1,105
95·5	2	23	30	2	23	39·5	1,025

Hygro. Begin 54 *dry.* End 53 *dry.* Barom. Begin 30,013 End 30,008

95	3	36	58 5	3	37	06.5	1,42
94 4	3	48	23	3	48	31	1,32
94·2	3	59	48	3	59	57	1,225
93·8	4	11	15 5	4	11	24 5	1,135
93	4	22	45	4	22	55·5	1,15

20th March A. M.

Hygro. Begin 10 *moist.* End 12 *moist.* Barom. Begin 30,055 End 30,072 *Inches.*

Temperature.	Disc. Hid.			Disc. Reappeared.			Arc of Vibration.
°	*h.*	′	″	*h.*	′	″	
79	6	37	41	6	37	50	1,525
79	6	49	25	6	49	34	1,415
79·5	7	01	09	7	01	18 5	1,31
79·9	7	12	55	7	13	05	1,205
79·9	7	24	43	7	24	53	1,11

Hygro. Begin 19 *moist.* End 17 *moist.* Barom. Begin 30,108 End 30,123

80 8	9	31	07 5	9	31	16	1,515
81	9	42	50	9	42	58·5	1,405
81	9	54	35	9	54	44	1,290
81.2	10	06	20	10	06	30	1,19
81 8	10	18	07	10	18	17	1,095

Hygro. Begin 5 *moist.* End 4 *dry.* Barom. Begin 30,072 End 30,073

85	11	23	02 5	11	23	10·5	1,495
85 3	11	34	40	11	34	48	1,39
85·8	11	46	17	11	46	25 5	1,29
85·2	11	57	55	11	58	04	1,19
85·6	12	09	35 5	12	09	45·5	1,10

Hygro. Begin 5 *dry.* End 4 *dry.* Barom. Begin 30,063 End 30,046

83	1	08	32·5	1	08	41	1,43
82	1	20	17	1	20	25	1,33
82·9	1	31	58·5	1	32	07·5	1,24
83	1	43	42·5	1	43	51·5	1,155
83	1	55	26	1	55	36	1,07

Hygro. Begin 12 *dry.* End 20 *dry.* Barom. Begin 30,023 End 30,023

85 5	8	23	29·5	3	23	38	1,41
86 5	3	35	05·5	3	35	14 5	1,31
86·4	3	46	43	3	46	52	1,22
85 9	3	58	21	3	58	30	1,13
85·9	4	10	01	4	10	11	1,045

Observations

For the LATITUDE of

Pulo GAUNSAH LOUT.

1822 Month.	Names.	Double Meridian Altitude.			Error of Sextant.	Height of the Therm.	Height of the Barom.	Remarks.
		°	′	″	′	°		
Dec. 23	Sun's L. L.....	132	30	25 s.	0· 40	89 2	30 1	
	Archernar.....	63	43	25	0· 40	84	30·12	
	βPersei.....	99	33	10 N.	0· 40	82·2	30·0	
	Capella.....	88	29	10	0· 40	84	30·01	
24	Sun's L. L.....	132	32	05 s.	0· 45	96	30	
	βAndromeda.....	110	43	15 N.	0· 45	82 8	30 09	
	δCassiepeiæ.....	61	29	30	0. 45	82 8	30 09	
	Archernar.....	63	43	30 s.	0· 45	83·2	30 06	
	γAndromeda.....	97	08	05 N	0· 45	83 2	30 06	
	γPersei.....	74	29	20	0· 45	82·5	30 03	
	βPersei.....	99	33	15	0· 45	82 2	30 0	
	αPersei.....	81	39	15	0· 45	83	30·10	
25	Sun's L. L.....	132	33	40 s.	0· 45	89 8	30·0	
26	Sun's L. L.....	132	37	15	0 43	89	30·0	
27	Sun's L. L.....	132	41	10	0· 43	91·3	30 10	
30	Sun's L. L.....	132	59	10	0· 43	80·8	30 09	
31	Sun's L. L.....	133	06	55	0· 45	88 5	30·09	
1823 Jan. 1	Sun's L. L.....	133	15	55	0 45	87	30	
	Archernar.....	63	43	40	0· 59	84 3	30·1	
	γAndromeda.....	97	08	25 N	0· 59	83 2	30 04	
	γPersei.....	74	29	45	0· 59	82·5	30·04	
	βPersei.....	99	33	45	0· 59	82 2	30·04	
	αPersei.....	81	39	15	0· 59	82·2	30 1	
	δPersei.....	85	40	10	0 59	82·1	30 1	
	ζPersei.....	117	23	30	0· 59	82·1	30 1	
	Capella.....	88	29	30	0· 59	82·1	30 1	
	βTauri.....	123	11	30	0· 59	81	30 06	
	ζ Canis Maj.....	119	59	55 s.	0· 59	81	30 06	
2	Sun's L. L.....	133	25	35	0· 55	88·5	30	
	Capella.....	88	29	40 N	0· 59	83	30·1	
	βTauri.....	123	11	45	0· 59	82 8	30 04	
4	Archernar.....	63	43	40 s.	0· 59	84 8	30 09	
	γAndromeda.....	97	08	50 N.	0· 59	83 7	30 09	
6	Sun's L. L.....	134	13	30 s.	0· 59	88 2	30 04	
7	αPersei.....	81	39	05 N.	0· 59	84	30 0	
	δPersei.....	85	40	40	0· 59	84	30 03	
	Capella.....	88	29	30	0· 59	83 9	30 03	
	βTauri.....	123	11	25	0· 59	83·9	30 00	
	αColumbæ.....	111	38	25 s.	0· 59	84 1	30.02	

1823 Month.	Names.	Double Meridian Altitude.			Error of Sextant.	Height of the Therm.	Height of the Barom.	Remarks.
		°	′	″		°		
Jan. 7	ζ Canis Maj.....	119	59	45	0. 59	81 6	30·0	
	Canopus.....	74	47	45	0· 59	77 2	30	
8	Sun's L. L.	134	42	55	0· 59	85	30	
	γ Andromeda	97	09	00 N.	0· 59	84 5	30 06	
	α Arietis.....	134	50	20	0· 59	84	30·06	
	γ Persei.....	74	29	45	0· 59	84	30 06	
	β Persei.....	99	33	40	0· 59	83 8	30 06	
	α Persei.....	81	39	30	0· 59	83 8	30·08	
	δ Persei.....	85	40	45	0· 59	83 8	30 08	
	ζ Persei.....	117	23	45	0· 59	83	30 08	
	ε Persei.....	101	07	10	0· 59	83	30 08	
	Capella.....	88	29	35	0· 59	82·5	30·10	
	β Tauri.....	123	11	20	0· 59	82	30·12	
	β Columbæ.....	108	18	05 s.	0· 59	80 8	30·12	
	ζ Canis Maj.....	119	59	35	0· 59	79	30·15	
	Canopus	74	47	35	0· 59	78·1	30·15	
9	Sun's L. L.....	134	59	00	0· 59	84 6	30 07	
	γ Andromeda	97	08	55 N	0· 59	83 7	30·09	
	γ Persei	74	29	25	0· 59	82 5	30 09	
	β Persei.....	99	33	35	0· 59	82·5	30 10	
10	Sun's L. L.....	135	15	45 s.	0· 59	86	30 1	
	β Persei.....	99	33	25 N.	0· 59	83	30 04	
	δ Persei.....	85	40	35	0· 59	82 8	30 04	
	ε Persei.....	101	07	05	0· 59	82 8	30·04	
	Capella.....	88	29	50	0· 59	82 5	30·08	
	β Tauri.....	123	11	35	0· 59	82 5	30 08	
11	Sun's L. L.....	135	33	45	0· 59	85 4	30 08	
17	β Persei.....	99	33	25	0· 59	82·7	30·10	
19	α Persei	81	39	35	0· 59	82 7	30·10	
20	Capella.....	88	29	15	1· 02	83	30 09	
21	γ Persei.....	74	29	30	1· 02	83·1	30 1	
	β Persei	99	33	35	1· 02	83·1	30·1	
	α Persei	81	39	40	1· 02	83	30 1	
	ζ Persei	117	23	40	1· 02	83	30·09	
	ε Persei	101	07	10	1· 02	82 5	30·09	
	Capella.....	88	29	25	1· 02	82 5	30 06	
	β Tauri.....	123	11	35	1· 02	82 2	30·06	
	ε Canis Maj.....	122	30	15 s.	1· 02	82	30·06	
25	Capella.....	88	29	15 N.	1· 02	83	30 07	
	β Tauri.....	123	11	35	1· 02	83	30 07	
	ε Canis Maj.....	122	29	55 s.	1· 02	82·5	30 09	
	δ Canis Maj.....	127	44	20	1· 02	82 5	30 09	
	π Navis.....	106	24	45	1· 02	82 1	30·09	

1823 Month.	Names.	Double Meridian Altitude.			Error of Sextant.	Height of the Therm.	Height of the Barom.	Remarks.
		°	′	″	′ ″	°		
Jan. 25	η Canis Maj.....	122	03	25	1· 02	82	30·1	
27	α Persei.....	81	39	35 N.	1· 02	83·2	30·10	
	ζ Persei.....	117	23	35	1· 02	83·2	30·1	
	δ Persei.....	85	40	45	1· 02	83	30·09	
	Capella.....	88	29	25	1· 02	82·3	30 09	
	β Tauri.....	123	11	20	1· 02	82·3	30·10	
	α Columbæ.....	111	38	25 S.	1· 02	81	30 1	
	β Columbæ.....	108	17	50	1· 02	80·6	30·1	
	ζ Canis Maj.....	119	59	40	1· 02	78·8	31 05	
	Canopus	74	47	30	1· 02	77·2	30 00	
	ε Canis Maj.....	122	30	25	1· 02	77	30 00	
	δ Canis Maj.....	127	44	10	1· 02	77	30 08	
	π Navis.....	106	24	40	1· 02	82·6	30 09	
	η Canis Maj.....	122	03	00	1· 02	82·4	30 09	
Feb. 6	ζ Canis Maj.....	119	59	30	1· 03	85 7	30 04	
	Canopus.....	74	47	25	1· 03	85 7	30 01	
	ε Canis Maj.....	123	30	35	1· 03	85	30 07	
	δ Canis Maj.....	127	44	55	1· 03	85	30·07	
	π Navis.....	106	24	55	1· 03	84	30·07	
	Castor.....	115	33	30 N.	1· 03	83	30 10	
	Pollux.....	123	12	00	1· 03	83	30·10	
8	Capella.....	88	29	30	0· 55	82·6	30 08	
	β Tauri.....	123	11	25	0· 55	82	30 08	
	ζ Canis Maj.....	119	59	35	0· 55	80·8	30 08	
	Canopus.....	74	47	20 S.	0· 55	77	30 08	
	θ Navis.....	93	53	15	0· 55	76·8	30·08	
	ε Canis Maj.....	122	30	20	0· 55	76·8	30 10	
	δ Canis Maj.....	127	44	05	0· 55	76 8	30·10	
	π Navis.....	106	24	20	0· 55	76 5	30·10	
	η Canis Maj.....	122	03	05	0· 55	76	30·13	
	Castor.....	115	33	45 N	0· 55	76	30·13	
	Pollux	123	12	15	0· 55	76	30·13	
	ζ Navis.....	100	57	25 S.	0· 55	76	30·13	
9	Capella.....	88	29	20 N.	0· 58	82·6	30·10	
	β Tauri.....	123	11	40	0· 58	82	30·10	
	α Columbæ.....	111	38	15 S.	0· 58	81·5	30·09	
	β Auriga.....	90	16	10 N.	0· 58	81·5	30 09	
	ζ Canis Maj.....	119	59	40 S.	0· 58	81·5	30 09	
	Canopus.....	74	47	15	0· 58	81·5	30 09	
	θ Navis.....	93	53	30	0· 58	81·5	30·09	
	ε Canis Maj.....	122	30	10	0· 58	81·2	30·09	
	δ Canis Maj.....	127	44	20	0 58	82	30·08	
	π Navis.....	106	24	20	0· 58	82	30·08	

1823. Month.	Names.	Double Meridian Altitude.			Error of Sextant.	Height of the Therm.	Height of the Barom.	Remarks.
		°	′	″	′ ″	°		
Feb. 9	η Canis Maj.....	122	03	10 s.	0· 58	82	30.08	
	Castor.....	115	34	05 N.	0· 58	82 6	30.08	
	Pollux	123	12	20	0· 58	82 6	30·08	
	ζ Navis	100	57	30 s.	0· 58	82·5	30·1	
	γ Navis	86	20	55	0· 58	82·5	30·1	
	δ Navis	71	52	10	0· 58	82 5	30·1	
	ι Ursæ Maj.....	82	38	50 N.	0· 58	83	30·04	
10	α Columbæ	111	38	20 s.	1· 00	84 3	30·09	
	β Aurigæ.....	90	15	55 N.	1· 00	84 3	30·10	
	ζ Canis Maj	119	59	50 s.	1· 00	84·3	30·1	
	Canopus	74	47	20	1· 00	84·3	30·1	
	θ Navis	93	53	20	1· 00	84·2	30.1	
	ε Canis Maj	122	30	10	1 00	84 2	30.09	
	δ Canis Maj	127	44	30	1· 00	84 2	30.09	
	π Navis	106	24	05	1· 00	84	30·09	
	Castor	115	34	00 N.	1· 00	84	30·09	
	Pollux.....	123	12	25	1· 00	84	30 10	
	ζ Navis.....	100	57	35 s.	1· 00	83·5	30·10	
	γ Navis	86	20	45	1· 00	83 5	30·1	
	δ Navis	71	51	55	1· 00	83 5	30·1	
11	Capella	88	29	10 N.	1· 00	84·2	30 08	
	β Aurigæ.....	90	15	55	1· 00	84·2	30 09	
	ζ Canis Maj	119	59	15 s.	1· 00	84	30·09	
	Canopus.....	74	47	20	1· 00	84	30 10	
	ε Canis Maj.....	122	30	15	1· 00	84	30·1	
	δ Canis Maj.	127	44	30	1· 00	83.5	30·1	
	Castor	115	33	55 N.	1· 00	83·5	30·1	
	Pollux.....	123	12	25	1· 00	83·5	30·11	
	ζ Navis	100	57	40 s.	1· 00	83	30·11	
	γ Navis	86	21	05	1· 00	83	30·10	
	δ Navis	71	52	10	1· 00	83	30·10	
12	Capella	88	29	05 N.	0· 59	84 6	30·07	
	β Tauri	123	12	05	0· 59	84·6	30·07	
	β Aurigæ	90	16	05	0· 59	84·6	30·07	
	ζ Canis Maj.....	119	59	35 s.	0· 59	84	30·07	
	Canopus.....	74	47	10	0· 59	84	30·09	
	θ Navis	93	53	15	0. 59	84	30·09	
	Pollux.....	123	12	10 N.	0· 59	83 5	30·1	
	ζ Navis.....	100	57	25 s.	0· 59	83 5	30·1	
	γ Navis.....	86	21	15	0· 59	83	30·1	
	β Navis	42	03	10	0· 59	83	30·10	
13	Capella	88	29	10 N.	0· 59	84.1	30·12	
	β Tauri.....	123	11	55	0· 59	84·1	30.12	

1823 Month.	Names.	Double Meridian Altitude.			Error of Sextant.	Height of the		Remarks.
						Ther.	Barom.	
		°	′	″	′ ″	°		
Feb. 13	ζ Canis Maj.....	119	59	40 s.	0 59	86 8	30 06	
	β Aurigæ.....	90	15	55 N.	0 59	86 8	30 06	
	Canopus.....	74	47	15 s.	0 59	86 5	30 06	
	θ Navis.....	93	53	30	0 59	86 5	30 05	
	ε Canis Maj.....	122	30	20	0 59	86	30 05	
	δ Canis Maj.....	127	44	10	0 59	86	30 02	
	π Navis.....	106	24	35	0 59	85 5	30 02	
	Pollux.....	123	12	15 N.	0 59	85	30 0	
	ζ Navis.....	100	57	45 s.	0 59	84	30	
	δ Navis.....	71	52	10	0 59	83 5	30	
	ι Uræ Maj.....	82	39	10 N.	0 59	83	30	
	λ Navis.....	94	32	05 s.	0 59	82 7	30 0	
	β Navis.....	42	03	00	0 59	82 7	30 0	
	χ Navis.....	71	29	05	0 59	82 7	30 0	
19	Canopus.....	74	47	20	0 59	82	30 07	
20	ζ Canis Maj.....	119	59	35	0 59	82	30 07	
	Canopus.....	74	47	10	0 59	82	30 09	
	θ Navis.....	93	53	25	0 59	81 5	30 09	
	ε Canis Maj.....	122	30	10	0 59	81 5	30 07	
	δ Canis Maj.....	127	44	25	0 59	81 5	30 02	
	π Navis.....	106	24	20	0 59	81 5	30 04	
	η Canis Maj.....	122	03	15	0 59	81	30 04	
	Castor.....	115	34	10 N.	0 59	81	30 04	
	Pollux.....	123	12	10	0 59	81	30 03	
23	Capella.....	88	29	15	0 59	78 2	30 02	
	β Tauri.....	123	11	50	0 59	78 2	30 02	
	α Columbæ.....	111	37	55 s.	0 59	77 9	30 02	
	β Aurigæ.....	90	15	40 N.	0 59	77 9	30 04	
	Canopus.....	74	47	15 s.	0 59	77 5	30 04	

Observations

for finding the RATE of the CLOCK during the period, while the Pendulum Experiments were making:

Also Comparisons, for the Rates of the Chronometers.

1823 Month.	Double Altitudes of the Sun.	Times by the Clock. Forenoon.	Afternoon.	Remarks.
				Comparison of Chronometers.
	°	h. ′ ″	h. ′ ″	
Feb. 14	98 U. L.	9 36 45·5	2 52 22	
	98 L. L.	9 39 04·5	2 50 04	
	100 U. L.	9 41 03	2 48 05·5	
	100 L. L.	9 43 21·5	2 45 47	
	102 U. L.	9 45 19·0	2 43 49	
	102 L. L.	9 47 38 5	2 41 30	
15	103 U. L.	9 47 01	2 42 03	
	103 L. L.	9 49 18	2 39 44·5	
	105 U. L.	9 51. 18	2 37 46·5	
	105 L. L.	9 53 37	2 35 26 5	
	107 U. L.	9 55 37·5	2 33 27	
	107 L. L.	9 57 55·5	2 31 07	
16				h. ′ ″
	100 U. L.	9 44 25	2 44 33 5	*Clock.* 12 16 00
	100 L. L.	9 46 43·5	2 42 14 5	*Earn.* 11 53 56·5
	102 U. L.	9 48 41	2 40 17	22 03 5
	102 L. L.	9 51 00	2 37 58	
	104 U. L.	9 52 57 5	2 35 00	
	104 L. L.	9 55 17	2 33 41	
18	95 U. L.	9 28 45	2 59 56	*Clock.* 12 15 00
	95 L. L.	9 31 00 5	2 57 39 5	*Earn.* 11 53 29
	97 U. L.	9 32 56	2 55 44	0 21 31
	97 L. L.	9 35 13	2 53 27·5	*Clock.* 12 16 00
	99 U. L.	9 37 09	2 51 30	391. 9 51 16
	99 L. L.	9 39 25·5	2 49 14·5	2 24 44
	101 U. L.	9 41 23	2 47 17·5	
	101 L. L.	9 43 39	2 45 01	
19	97 U. L.	9 32 29	2 55 59	*Clock.* 12 18 00
	97 L. L.	9 34 46	2 53 42	*Earn.* 11 56 44
	101 U. L.	9 40 55	2 47 34	0 21 16
	101 L. L.	9 43 12	2 45 17 5	*Clock.* 12 19 00
	103 U. L.	9 45 08	2 43 21	391. 9 54 05
	103 L. L.	9 47 24 5	2 41 05	2 24 55

Month.	Double Altitudes of the Sun.	Times by the Clock. Forenoon.	Afternoon.	Remarks.
				Comparison of Chronometers.
	°	h. ′ ″	h. ′ ″	h. ′ ″
Feb. 20	95 U. L.	9 27 53	3 00 24	*Clock.* 12 18 00
	95 L. L.	9 30 08	2 58 08	*Earn.* 11 57 01
	97 U. L.	9 32 03	2 56 12	20 59
	97 L. L.	9 34 18·5	2 53 56·5	*Clock.* 12 19 00
	99 U. L.	9 36 13·5	2 52 01·5	391. 9 53 16
	99 L. L.	9 38 30	2 49 45·5	2 25 44
	101 U. L.	9 40 26	2 47 49	
	101 L. L.	9 42 43	2 45 33	
21	99 L. L.	9 37 08	2 49 01·5	
	101 U. L.	9 39 02	2 47 08	
	101 L. L.	9 41 19	2 44 51·5	
22	95 U. L.	9 26 05·5	2 59 51	*Clock.* 12 16 00
	95 L. L.	9 28 20	2 57 36	*Earn.* 11 56 28
	97 U. L.	9 30 15	2 55 41	0 19 32
	97 L. L.	9 32 30	2 53 26	*Clock.* 12 17 00
	99 U. L.	9 34 25	2 51 31	391. 9 52 30
	99 L. L.	9 36 40·5	2 49 15·5	2 24 30
	101 U. L.	9 38 35·5	2 47 20·5	
	101 L. L.	9 40 50	2 45 05·5	
23	95 U. L.	9 25 40	2 59 59	*Clock.* 12 14 00
	95 L. L.	9 27 54	2 57 44	*Earn.* 11 54 45
	97 U. L.	9 29 48	2 55 50·5	0 19 15
	97 L. L.	9 32 03	2 53 35·5	*Clock.* 12 15 00
	99 U. L.	9 33 57	2 51 41·5	391. 9 50 21
	99 L. L.	9 36 13	2 49 26	2 24 39
	101 U. L.	9 38 06·5	2 47 32·5	
	101 L. L.	9 40 21	2 45 17	
24	95 U. L.	9 25 12	3 00 07	*Clock.* 12 16 00
	95 L. L.	9 27 26	2 57 52	*Earn.* 11 57 03
	97 U. L.	9 29 19·5	2 55 59	0 18 57
	97 L. L.	9 31 33·5	2 53 45	*Clock.* 12 17 00
	99 U. L.	9 33 28	2 51 50	391. 9 52 12
	99 L. L.	9 35 43	2 49 35·5	2 24 48
	101 U. L.	9 37 36	2 47 43	
	101 L. L.	9 39 51·5	2 45 27	
25	126 U. L.	10 29 35	1 55 23	*Clock.* 12 21 00
	126 L. L.	10 31 54	1 53 04	*Earn.* 12 02 25
	129 U. L.	10 36 02	1 48 56·5	0 18 35
	129 L. L.	10 38 22	1 46 37	*Clock.* 12 22 00
	132 U. L.	10 42 33	1 42 26	391 9 57 01
	132 L. L.	10 44 54	1 40 05	2 24 59

Month.	Double Altitudes of the Sun.	Times by the Clock. Forenoon.	Afternoon.	Remarks.
				Comparison of Chronometers.
		h. ′ ″	*h.* ′ ″	*h.* ′ ″
Feb. 26	96 U. L.	9 26 22·5	2 58 15·5	*Clock.* 12 15 00
	96 L. L.	9 28 35	2 56 02	*Earn.* 11 56 45
	98 U. L.	9 30 28	2 54 09·5	0 18 15
	98 L. L.	9 32 42	2 51 55·5	*Clock.* 12 16 00
	100 U. L.	9 34 36	2 50 01·5	391. 9 50 50
	100 L. L.	9 36 50	2 47 47	2 25 10
	102 U. L.	9 38 43	2 45 54	
	102 L. L.	9 40 58	2 43 40	
27	96 U. L.	9 25 17	2 57 42	*Clock.* 12 18 00
	96 L. L.	9 27 30·5	2 55 28	*Earn.* 12 00 40
	98 U. L.	9 29 23	2 53 35	0 17 20
	98 L. L.	9 31 37	2 51 22	*Clock.* 12 19 00
	100 U. L.	9 33 29·5	2 49 30	391. 9 54 17
	100 L. L.	9 35 44	2 47 15	2 24 43
	102 U L.	9 37 36·5	2 45 21·5	
	102 L. L.	9 39 51	2 43 08	
March 1	97 U. L.	9 26 27	2 55 47	*Clock.* 12 17 00
	97 L. L.	9 28 39 5	2 53 33·5	*Earn.* 12 00 17 25
	99 U. L.	9 30 33	2 51 41	16 42 75
	99 L. L.	9 32 45	2 49 28·5	*Clock.* 12 18 00
	101 U. L.	9 34 38	2 47 35	391. 9 52 53
	101 L. L.	9 36 51	2 45 22 5	2 25 07
	103 U. L.	9 38 44	2 43 29·5	
	103 L. L.	9 40 57·5	2 41 15·5	
3	97 U. L.	9 25 36	2 55 50·5	*Clock.* 12 17 00
	97 L. L.	9 27 48	2 53 38	*Earn.* 12 00 59
	99 U. L.	9 29 41	2 51 46	16 01
	99 L. L.	9 31 53	2 49 34	*Clock.* 12 18 00
				391. 9 52 30
				2 25 30
4	96 L. L.	9 25 20	2 55 39·5	*Clock.* 12 21 00
	98 U. L.	9 27 12	2 53 48	*Earn.* 12 05 21
	98 L. L.	9 29 23 5	2 51 36·5	15 39
	100 U. L.	9 31 16	2 49 44·5	*Clock.* 12 22 00
	100 L. L.	9 33 29	2 47 32	391. 9 56 19
	102 U. L.	9 35 20	2 45 40·5	2 25 41
	102 L. L.	9 37 32	2 43 28	

Month.	Double Altitudes of the Sun.	Times by the Clock. Forenoon. h. ' "	Afternoon. h. ' "	Remarks.
				Comparison of Chronometers.
March 8	95 U. L.	9 18 56	2 59 07	*Clock.* 12 31 00
	95 L. L.	9 21 07	2 56 56	*Earn.* 12 17 31
	97 U. L.	9 22 57·5	2 55 04·5	0 13 29
	97 L. L.	9 25 08·5	2 52 53	*Clock.* 12 32 00
	99 U. L.	9 26 59	2 51 03	391. 10 16 10
	99 L. L.	9 29 11	2 48 51·5	2 25 50
	101 U. L.	9 31 02	2 46 59·5	
	101 L. L.	9 33 13·5	2 44 49	
9	95 U. L.	9 18 33·5	2 59 00·5	*Clock.* 12 16 00
	95 L. L.	9 20 43	2 56 50	*Earn.* 12 18 09·75
	97 U. L.	9 22 34·5	2 54 58·5	02 09·75
	97 L. L.	9 24 44·5	2 52 48	*Clock.* 12 17 00
	99 U. L.	9 26 36	2 50 56·5	391. 8 7 26·5
	99 L. L.	9 28 47	2 48 46	4 09 33·5
	101 U. L.	9 30 38·5	2 46 55	
	101 L. L.	9 32 48·5	2 44 45	
10	95 U. L.	9 18 09	2 58 53·5	*Clock.* 12 18 00
	97 U. L.	9 22 11	2 54 53	*Earn.* 12 20 26
	99 U. L.	9 26 14	2 50 50	02 26
	103 U. L.	9 34 16	2 42 48	*Clock.* 12 19 00
	105 L. L.	9 40 28·5	2 36 34	391. 8 09 08·25
	107 U. L.	9 42 19	2 34 45	4 09 51·75
	107 L. L.	9 44 30	2 32 32·5	
	109 U. L.	9 46 22	2 30 41	
	109 L. L.	9 48 32·5	2 28 30	
11	96 U. L.	9 19 19	2 56 19·5	*Clock.* 12 24 00
	96 L. L.	9 21 29·5	2 54 09	*Earn.* 12 27 06·25
	98 U. L.	9 23 21	2 52 17·5	03 06·25
	98 L. L.	9 25 32	2 50 07	*Clock.* 12 25 00
	100 U. L.	9 27 23	2 48 16	391. 8 15 20
	100 L. L.	9 29 33	2 46 05·5	4 09 40
	102 U. L.	9 31 24	2 44 15	
	102 L. L.	9 33 35	2 42 04	
12	97 U. L.	9 20 58	2 54 09	*Clock.* 12 11 00
	97 L. L.	9 23 08	2 51 58·5	*Earn.* 12 14 21·25
	99 U. L.	9 24 59	2 50 08	3 21·25
	99 L. L.	9 27 09·5	2 47 56·5	*Clock.* 12 12 00
	101 U. L.	9 29 00·5	2 46 06	391. 8 02 11
	101 L. L.	9 31 10·5	2 43 56·5	4 09 49
	103 U. L.	9 33 01	2 42 06	
	103 L. L.	9 35 12	2 39 55	

Month.	Double Altitudes of the Sun.	Times by the Clock. Forenoon.	Afternoon.	Remarks
				Comparison of Chronometers.
		ht ′ ″	*h.* ′ ″	*h.* ′ ″
March 13	95 U. L.	9 16 35	2 58 00	*Clock.* 12 06 00
	95 L. L.	9 18 44	2 55 50	*Earn.* 12 09 39
	97 U. L.	9 20 35	2 53 59 5	03 39
	97 L. L.	9 22 45·5	2 51 48 5	*Clock.* 12 07 00
	99 U. L.	9 24 36	2 49 58 5	391. 8 56 55
	99 L. L.	9 26 46	2 47 48·5	4 10 05
	101 U. L.	9 28 36·5	2 45 58	
	101 L. L.	9 30 46·5	2 43 48	
14	95 U. L.	9 16 13	2 57 49 5	*Clock.* 12 22 00
	95 L. L.	9 18 22	2 55 40	*Earn.* 12 25 55·75
	97 U. L.	9 20 12·5	2 53 49	3 55·75
	97 L. L.	9 22 22·5	2 51 38 5	*Clock.* 12 23 00
	99 U. L.	9 24 13	2 49 49	391. 8 12 43
	99 L. L.	9 26 23	2 47 39	4 10 17
	101 U. L.	9 28 14	2 45 48	
	101 L. L.	9 30 24	2 43 38	
16	98 U. L.	9 21 29·5	2 51 22·5	*Clock.* 12 24 00
	98 L. L.	9 23 39	2 49 13 5	*Earn.* 12 28 40·5
	113 U. L.	9 51 34	2 21 19	4 40·5
	113 L. L.	9 53 43	2 19 09·5	*Clock.* 12 25 00
	118 U. L.	10 01 54	2 11 18	391. 8 14 21
	118 L. L.	10 03 43·5	2 09 08 5	4 10 39
	120 U. L.	10 05 35	2 07 18	
	120 L. L.	10 07 44	2 05 08·5	
17	95 U. L.	9 14 47	2 56 47·5	*Clock.* 12 01 00
	95 L. L.	9 16 55	2 54 38	*Earn.* 12 06 26·25
	97 U. L.	9 18 47	2 52 47 5	05 26 25
	97 L. L.	9 20 55	2 50 37·5	*Clock.* 12 02 00
	99 U. L.	9 22 47	2 48 47	391. 7 51 32·75
	99 L. L.	9 24 55 5	2 46 37 5	4 10 27·25
	101 U. L.	9 26 47	2 44 47	
	101 L. L.	9 28 56	2 42 37	
	103 U. L.	9 30 47	2 40 47	
	103 L. L.	9 32 56	2 38 37	
				Clock. 12 01 00
				Earn. 12 06 43
18	114 U. L.	9 52 26·5	2 18 30	05 43
	114 L. L.	9 54 36·5	2 16 20	*Clock.* 12 02 00
	116 U. L.	9 56 27	2 14 29	391. 7 51 21
				4 10 39

Month.	Double Altitudes of the Sun.	Times by the Clock. Forenoon.	Afternoon.	Remarks.
				Comparison of Chronometers.
	°	h. ′ ″	h. ′ ″	h. ′ ″
March 19	94 U. L.....	9 12 04·5	2 58 14	*Clock.* 12 13 00
	94 L. L.....	9 14 13	2 56 05	*Earn.* 12 19 02·25
	96 U. L.....	9 16 04	2 54 14·5	6 02·25
	96 L. L.....	9 18 13	2 52 05·5	*Clock.* 12 14 00
	98 U. L.....	9 20 04	2 50 14	391. 3 03 08·25
	98 L. L.....	9 22 13	2 48 05	4 10 51 75
	100 U. L.....	9 24 04·5	2 46 14	
	100 L. L.....	9 26 13	2 44 05	
20	94 U. L.....	9 11 44	2 57 57·5	*Clock.* 12 02 00
	94 L. L.....	9 13 53·5	2 55 49	*Earn.* 12 08 24·5
	96 U. L.....	9 15 44	2 53 57	06 24 5
	96 L. L.....	9 17 53	2 51 48	*Clock.* 12 03 00
	98 U. L.....	9 19 44·5	2 49 57	391. 7 51 57 25
	98 L. L.....	9 21 53·5	2 47 48	4 11 02 75
	100 U. L.....	9 23 44·5	2 45 57	
	100 L. L.....	9 25 53·5	2 43 48	

For the TIME *and* LONGITUDE ;

Also for the RATES *of the* CHRONOMETERS,

before the Clock was fixed.

1822 Month.	Double Altitudes of the Sun.	Times by Chronometer 391. Forenoon.	Afternoon.	Comparison of the Chronometers with 391.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
Dec : 24	98 U. L.....	7 27 26	12 07 21·5	391. 9 47 24	
	98 L. L.....	7 30 09·5	12 04 38	*Earn.* 11 23 43	
	100 U. L.....	7 32 30	12 02 19	1 35 49	
	100 L. L.....	7 35 14·5	11 59 33		
	102 U. L.....	7 37 36	11 57 11		
	102 L. L.....	7 40 23·5	11 54 23·5		
	104 U. L.....	7 42 47	11 52 01		
	104 L. L.....	7 45 38·5	11 49 09·5		
25	96 U. L.....	7 22 29·5	12 12 29	391. 9 47 03	
	96 L. L.....	7 25 11	12 09 47	*Earn.* 11 23 56	
	98 U. L.....	7 27 28·5	12 07 29	1 36 53	
	98 L. L.....	7 30 13	12 04 45·5		
	100 U. L.....	7 32 31·5	12 02 27		
	100 L. L.....	7 35 17	11 59 41		
	102 U. L.....	7 37 38	11 57 21		
	102 L. L.....	7 40 25·5	11 54 32·5		

Month.	Double Altitudes of the Sun.	Times by Chron. Earnshaw. Forenoon.	Afternoon.	Comparison of the Chronometers with *Earnshaw*.	Remarks.
		h. ′ ″	h. ′ ″	h. ′ ″	
Dec. 26	98 U. L.....	9 04 30	1 44 44·5	*Earn.* 11 24 37	
	98 L. L.....	9 07 12·5	1 42 00	391. 9 47 28	
	100 U. L.....	9 09 33	1 39 41·5	1 37 09	
	100 L. L.....	9 12 18	1 36 54·5		
	102 U. L.....	9 14 38·5	1 34 36		
	102 L. L.....	9 17 27	1 31 48		
	104 U. L.....	9 19 50	1 29 24 5		
	104 L. L.....	9 22 40·5	1 26 33·5		
27	98 U. L.....	9 05 09·5	1 45 35·5	*Earn.* 11 25 22	
	98 L. L.....	9 07 54	1 42 50·5	391. 9 47 33	
	100 U. L.....	9 10 13·5	1 40 32	1 37 49	
	100 L. L.....	9 12 58 5	1 37 46 5		
	102 U. L.....	9 15 19	1 35 06		
	102 L. L.....	9 18 07 5	1 32 38·5		
	104 U. L.....	9 20 30	1 30 16		
	104 L. L.....	9 23 21	1 27 25		
28	102 U. L.....	9 15 58·5	1 36 22	*Earn.* 11 26 20	
	102 L. L.....	9 18 46·5	1 33 33·5	391. 9 47 32	
	106 L. L.....	9 29 17 5	1 23 02·5	1 38 48	
	108 U. L.....	9 31 44·5	1 20 36		
	108 L. L.....	9 34 41	1 17 39·5		
	110 U. L.....	9 37 12	1 15 09		
31	98 U. L.....	9 07 40·5	1 49 08	*Earn.* 11 28 24	
	98 L. L.....	9 10 23	1 46 26	391. 9 48 13	
	100 U. L.....	9 12 42	1 44 07	1 40 11	
	100 L. L.....	9 15 26 5	1 41 23 5		
	102 U. L.....	9 17 45·5	1 39 03		
	102 L. L.....	9 20 33	1 36 17		
	104 U. L.....	9 22 54	1 33 55		
	104 L. L.....	9 25 44·5	1 31 06		
Jan. 1	99 U. L.....	9 10 42	1 47 32	*Earn.* 11 29 06	
	99 L. L.....	9 13 26	1 44 48·5	391. 9 48 32	
	101 U. L.....	9 15 44	1 42 30	1 40 34	
	101 L. L.....	9 18 30·5	1 39 45		
	103 U. L.....	9 20 50	1 37 25		
	103 L. L.....	9 23 38·5	1 34 36·5		
	105 U. L.....	9 26 00	1 32 14		
	105 L. L.....	9 28 50 5	1 29 23·5		

Month.	Double Altitudes of the Sun.	Times by Chron. Earnshaw. Forenoon.	Afternoon.	Comparison of the Chronometers with *Earnshaw.*	Remarks.
		h. ′ ″	h. ′ ″	h. ′ ″	
Jan. 2	101 U. L.....	9 16 13	1 43 25	*Earn.* 11 29 48	
	101 L. L.....	9 18 58	1 40 39	391. 9 48 42	
	103 U. L.....	9 21 18	1 38 19·5	1 41 06	
	103 L. L.....	9 24 06	1 35 33		
	105 U. L.....	9 26 28·5	1 33 09·5		
	105 L. L.....	9 29 18·5	1 30 19·5		
	107 U. L.....	9 31 43	1 27 55		
	107 L. L.....	9 34 35·5	1 25 03		
4	98 U. L.....	9 09 42	1 52 50·5	*Earn.* 11 31 14	
	98 L. L.....	9 12 24	1 50 08	391. 9 49 07	
	100 U. L.....	9 14 41·5	1 47 50	1 42 07	
	100 L. L.....	9 17 25	1 45 06·5		
	102 U. L.....	9 19 43	1 42 49		
	102 L. L.....	9 22 28	1 40 03·5		
	104 U. L.....	9 24 48	1 37 44		
	104 L. L.....	9 27 37	1 34 53		
6	98 U. L.....	9 10 40	1 54 48·5	*Earn.* 11 32 43	
	98 L. L.....	9 13 21·5	1 52 07	391. 9 49 40	
	100 U. L.....	9 15 39	1 49 50	1 43 03	
	100 L. L.....	9 18 20·5	1 47 08·5		
	102 U. L.....	9 20 38·5	1 44 50		
	102 L. L.....	9 23 23·5	1 42 05		
	104 U. L.....	9 25 42·5	1 39 46		
	104 L. L.....	9 28 30·5	1 36 58		
9	97 U. L.....	9 09 16·5	2 00 01·5	*Earn.* 11 34 38	
	97 L. L.....	9 11 56·5	1 57 22	391. 9 50 19	
	99 U. L.....	9 14 10·5	1 55 08	1 44 19	
	99 L. L.....	9 16 51	1 52 28		
	101 U. L.....	9 19 07·5	1 50 12		
	101 L. L.....	9 21 49	1 47 30·5		
	103 U. L.....	9 24 06	1 45 12		
	103 L. L.....	9 26 50·5	1 42 28·5		
10	96 U. L.....	9 07 10	2 03 23	*Earn.* 11 35 15	
	96 L. L.....	9 09 48	2 00 45	391. 9 50 28	
	98 U. L.....	9 12 01	1 58 32·5	1 44 47	
	98 L. L.....	9 14 41	1 55 52·5		
	100 U. L.....	9 16 55	1 53 39·5		
	100 L. L.....	9 19 36·5	1 50 56·5		
	102 U. L.....	9 21 51	1 48 42		
	102 L. L.....	9 24 35	1 45 58·5		

Month.	Double Altitudes of the Sun.	Times by Chron. Earnshaw. Forenoon.	Afternoon.	Comparison of the Chronometers with *Earnshaw*.	Remarks.
	°	*h.* ′ ″	*h.* ′ ″	° *h.* ′ ″	
Jan. 11	96 U. L.....	9 07 28·5	2 04 19	*Earn.* 11 35 52	
	96 L. L.....	9 10 05 5	2 01 41·5	391. 9 50 37	
	98 U. L.....	9 12 19	1 59 29	1 45 15	
	98 L. L.....	9 14 57	1 56 50 5		
	100 U. L.....	9 17 11·5	1 54 37		
	100 L. L.....	9 19 53	1 51 55		
	102 U. L.....	9 22 07 5	1 49 40		
	102 L. L.....	9 24 50	1 46 57		
12	95 U. L.....	9 05 23	2 07 41	*Earn.* 11 36 30	
	95 L. L.....	9 07 58	2 05 04·5	391. 9 50 47	
	97 U. L.....	9 10 11	2 02 52 5	1 45 43	
	100 U. L.....	9 17 28	2 55 36		
	100 L. L.....	9 20 06 5	1 52 56		
	102 U. L.....	9 22 23	1 50 41·5		
	102 L. L.....	9 25 03	1 47 59·5		
	104 U. L.....	9 27 19	1 45 45		
	104 L. L.....	9 30 04	1 42 59		
15	96 U. L.....	9 08 44·5	2 08 22·5	*Earn.* 11 38 31	
	96 L. L.....	9 11 20	2 05 46 5	391. 9 51 15	
	98 U. L.....	9 13 32	2 03 35	1 47 16	
	98 L. L.....	9 16 08	2 00 58		
	100 U. L.....	9 18 20 5	1 58 45·5		
	100 L. L.....	9 20 59	1 56 07		
	102 U. L.....	9 23 12	1 53 54 5		
	102 L. L.....	9 25 52	1 51 15		
16	95 U. L.....	9 06 34·5	2 11 37 5	*Earn.* 11 39 03	
	95 L. L.....	9 09 07 5	2 09 03·5	391. 9 51 25	
	97 U. L.....	9 11 18 5	2 06 52·5	1 47 38	
	97 L. L.....	9 13 53	2 04 18 5		
	99 U. L.....	9 16 04	2 02 07		
	99 L. L.....	9 18 41	1 59 30·5		
	101 U. L.....	9 20 54	1 57 17 5		
	101 L. L.....	9 23 32	1 54 39		
19	95 U. L.....	9 07 10	2 14 31	*Earn.* 11 40 48	
	95 L. L.....	9 09 43	2 11 58	391. 9 51 59	
	97 U. L.....	9 11 51 5	2 09 49 5	1 48 49	
	97 L. L.....	9 14 26	2 07 16 5		
	99 U. L.....	9 16 35 5	2 05 06		
	99 L. L.....	9 19 10	2 02 32		
	101 U. L.....	9 21 21	2 00 20 5		
	101 L. L.....	9 23 56·5	1 57 44		

Month.	Double Altitudes of the Sun.	Times by Chron. Earnshaw. Forenoon.	Afternoon.	Comparison of the Chronometers with *Earnshaw.*	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
Jan. 20	98 U. L.....	9 14 21·5	2 08 25	*Earn.* 11 41 21	
	98 L. L.....	9 16 54	2 05 52·5	391. 9 52 06	
	100 U. L.....	9 19 04·5	2 03 41	1 49 15	
	100 L. L.....	9 21 39	2 01 07		
21	96 U. L.....	9 09 46·5	2 14 02	*Earn.* 11 41 52	
	96 L. L.....	9 12 18 5	2 11 31·5	391. 9 52 12	
	98 U. L.....	9 14 27	2 09 23	1 49 40	
	98 L. L.....	9 16 59·5	2 06 49·5		
	100 U. L.....	9 19 09	2 04 39 5		
	100 L. L.....	9 21 43·5	2 02 05		
	102 U. L.....	9 23 54	1 59 55		
	102 L. L.....	9 26 30	1 57 20		
22	96 U. L.....	9 09 53·5	2 14 59	*Earn.* 11 42 24	
	96 L. L.....	9 12 25	2 12 28	391. 9 52 19	
	98 U. L.....	9 14 32·5	2 10 19 5	1 50 05	
	98 L. L.....	9 17 05	2 07 47·5		
	100 U. L.....	9 19 15	2 05 38·5		
	100 L. L.....	9 21 48	2 03 04·5		
	102 U. L.....	9 23 58 5	2 00 55		
	102 L. L.....	9 26 33	1 58 20		
23	96 U. L.....	9 09 59	2 15 54	*Earn.* 11 42 54	
	96 L. L.....	9 12 30	2 13 22 5	391. 9 52 23	
	98 U. L.....	9 14 38	2 11 15·5	1 49 31	
	98 L. L.....	9 17 08·5	2 08 44		
	100 U. L.....	9 19 17·5	2 06 34·5		
	100 L. L.....	9 21 49·5	2 04 02·5		
	102 U. L.....	9 23 58 5	2 01 54		
	102 L. L.....	9 26 34	1 59 19		
24	96 U. L.....	9 10 07	2 16 53·5	*Earn.* 11 43 28	
	96 L. L.....	9 12 38·5	2 14 23	391. 9 52 25	
	98 U. L.....	9 14 45	2 12 16	1 51 03	
	98 L. L.....	9 17 16	2 09 45		
	100 U. L.....	9 19 24·5	2 07 37		
	100 L. L.....	9 21 56 5	2 05 05		
	102 U. L.....	9 24 05·5	2 02 56 5		
	102 L. L.....	9 26 38	2 00 24		

Month.	Double Altitudes of the Sun.	Times by Chron. Earnshaw. Forenoon.	Afternoon.	Comparison of the Chronometers with *Earnshaw*.	Remarks.
		h. ′ ″	h. ′ ″	h. ′ ″	
Jan: 27	97 U. L.....	9 12 49	2 17 35·5	*Earn.* 11 45 10	
	97 L. L.....	9 15 18·5	2 15 06·5	391. 9 52 19	
	99 U. L.....	9 17 24	2 13 01	1 52 51	
	99 L. L.....	9 19 53·5	2 10 32		
	101 U. L.....	9 21 59·5	2 08 24·5		
	101 L. L.....	9 24 32	2 05 54		
	103 U. L.....	9 26 39	2 03 47		
	103 L. L.....	9 29 11	2 01 14		
28	100 U. L.....	9 19 47·5	2 11 40	*Earn.* 11 45 42	
	102 U. L.....	9 24 24	2 07 05·5	391. 9 52 07	
	102 L. L.....	9 26 52·5	2 04 35	1 53 35	
	106 U. L.....	9 33 42	1 57 47		
	108 L. L.....	9 40 58	1 50 30·5		
	110 U. L.....	9 43 08·5	1 48 20·5		
	110 L. L.....	9 45 45	1 45 44		
30	96 U. L.....	9 10 47	2 22 40·5	*Earn.* 11 46 41	
	96 L. L.....	9 13 13	2 20 14	391. 9 52 18	
	98 U. L.....	9 15 18	2 18 10	1 54 23	
	98 L. L.....	9 17 45	2 15 42·5		
	100 U. L.....	9 19 50	2 13 37·5		
	100 L. L.....	9 22 19	2 11 08·5		
	102 U. L.....	9 24 24	2 09 04		
	102 L. L.....	9 26 52	2 06 35		
31	96 U. L.....	9 10 46	2 23 29·5	*Earn.* 11 47 05	
	96 L. L.....	9 13 12	2 21 03·5	391. 9 52 18	
	98 U. L.....	9 15 17	2 19 00	1 54 47	
	98 L. L.....	9 17 43	2 16 33		
	100 U. L.....	9 19 47	2 14 29·5		
	100 L. L.....	9 22 16	2 12 00·5		
	102 U. L.....	9 24 20	2 09 58		
	102 L. L.....	9 26 48	2 07 29		
Feb. 2	98 U. L.....	9 15 16·5	2 20 47·5	*Earn.* 11 47 59	
	98 L. L.....	9 17 42	2 18 22	391. 9 52 18	
	100 U. L.....	9 19 45 5	2 16 19	1 55 41	
	100 L. L.....	9 22 11	2 13 53		
	102 U. L.....	9 24 15	2 11 49		
	102 L. L.....	9 26 42	2 09 22 5		
	104 U. L.....	9 28 46·5	2 07 18		
	104 L. L.....	9 31 15	2 04 49		

Month.	Double Altitudes of the Sun.	Times by Chron. Earnshaw. Forenoon.	Afternoon.	Comparison of the Chronometers with *Earnshaw*.	Remarks.
		h. ′ ″	h. ′ ″	h. ′ ″	
Feb. 3	100 U. L.....	9 19 42	2 17 11	*Earn.* 11 48 24	
	100 L. L.....	9 22 06·5	2 14 46·5	391. 9 52 14	
	102 U. L.....	9 24 09·5	2 12 43	1 56 10	
	102 L. L.....	9 26 36·5	2 10 17		
	104 U. L.....	9 28 40·5	2 08 12		
	104 L. L.....	9 31 07	2 05 45·5		
5	96 U. L.....	9 10 46	2 27 46	*Earn.* 11 49 13	
	96 L. L.....	9 13 09	2 25 23	391. 9 52 6	
	98 U. L.....	9 15 09·5	2 23 22	1 57 7	
	98 L. L.....	9 17 34·5	2 20 58		
	100 U. L.....	9 19 36	2 18 55·5		
	100 L. L.....	9 21 59·5	2 16 31·5		
	102 U. L.....	9 24 02.5	2 14 28·5		
	102 L. L.....	9 26 28	2 12 04		
7	104 U. L.....	9 28 27	2 11 48·5	*Earn.* 11 50 05	
	104 L. L.....	9 30 51	2 09 23	391. 9 51 53	
	106 U. L.....	9 32 53·5	2 07 23	1 58 12	
	106 L. L.....	9 35 19·5	2 04 56		
	108 U. L.....	9 37 23·5	2 02 52		
	108 L. L.....	9 39 49	2 00 26 5		
8	95 U. L.....	9 08 36·5	2 32 26	*Earn.* 11 50 28	
	95 L. L.....	9 10 57·5	2 30 03·5	391. 9 51 49	
	97 U. L.....	9 12 57	2 28 05	1 58 39	
	97 L. L.....	9 15 19	2 25 43.5		
	99 U. L.....	9 17 18·5	2 23 13		
	99 L. L.....	9 19 41·5	2 21 21		
	101 U. L.....	9 21 42	2 19 20		
	101 L. L.....	9 24 05·5	2 16 55 5		
9	95 U. L.....	9 08 29·5	2 33 07·5	*Earn.* 11 50 46	
	95 L. L.....	9 10 50	2 30 47	391. 9 51 40	
	97 U. L.....	9 12 49 5	2 28 48	1 59 06	
	97 L. L.....	9 15 11	2 26 28		
	99 U. L.....	9 17 11	2 24 28		
	99 L. L.....	9 19 33	2 22 05·5		
	101 U. L.....	9 21 33	2 20 05·5		
	101 L. L.....	9 23 55 5	2 17 42·5		

Month.	Double Altitudes of the Sun.	Times by Chron. Earnshaw. Forenoon.	Afternoon.	Comparison of the Chronometers with *Earnshaw.*	Remarks.
		h. ′ ″	h. ′ ″	h. ′ ″	
Feb. 10	96 U. L.....	9 10 35·5	2 31 41·5	*Earn.* 11 51 06	
	96 L. L.....	9 12 55	2 29 21	391. 9 51 32	
	98 U. L.....	9 14 54·5	2 27 21·5	1 59 34	
	98 L. L.....	9 17 17	2 25 01		
	100 U. L.....	9 19 16	2 23 00·5		
	100 L. L.....	9 21 36·5	2 20 40·5		
	102 U. L.....	9 23 37	2 18 41		
	102 L. L.....	9 25 59	2 16 19		
11	96 U. L.....	9 10 26·5	2 32 18	*Earn.* 11 51 20	
	96 L. L.....	9 12 45	2 29 58·5	391. 9 51 18	
	98 U. L.....	9 14 44	2 28 00	2 00 02	
	98 L. L.....	9 17 04	2 25 40·5		
	100 U. L.....	9 19 03·5	2 23 41		
	100 L. L.....	9 21 25	2 21 20		
	102 U. L.....	9 23 24	2 19 21		
	102 L. L.....	9 25 45	2 17 00		
12	96 U. L.....	9 10 17	2 32 58	*Earn.* 11 51 35	
	96 L. L.....	9 12 36	2 30 38·5	391. 9 51 06	
	98 U. L.....	9 14 35	2 28 40	2 00 29	
	98 L. L.....	9 16 54·5	2 26 21		
	100 U. L.....	9 18 53	2 24 22		
	100 L. L.....	9 21 13	2 22 01·5		
	102 U. L.....	9 23 12·5	2 20 03·5		
	102 L. L.....	9 25 33	2 17 43		
13	96 U. L.....	9 10 05	2 33 33·5	*Earn.* 11 51 47	
	96 L. L.....	9 12 25	2 31 13·5	391. 9 50 54	
	98 U. L.....	9 14 23	2 29 16	2 00 53	
	98 L. L.....	9 16 42·5	2 26 56·5		
	100 U. L.....	9 18 40·5	2 24 57·5		
	100 L. L.....	9 21 00	2 22 39		
	102 U. L.....	9 22 59	2 20 40·5		
	102 L. L.....	9 25 19·5	2 18 21		

The Chronometers compared with the Clock which was now fixed, *(vide page 63 to 68.)*

	Clock taken down.	*Times by Earnshaw.*		*with Earnshw.*	
March 21	98 U. L.....	9 26 05·5	2 56 23.5	*Earn.* 12 11 14	
	98 L. L.....	9 28 14·5	2 54 13·5	391. 7 53 16	
	100 U. L.....	9 30 05·5	2 52 23	4 17 58	
	100 L. L.....	9 32 15	2 50 14		
	102 U. L.....	9 34 05·5	2 48 23		
	102 L. L.....	9 36 15	2 46 14		
	104 U. L.....	9 38 05·5	2 44 23		
	104 L. L.....	9 40 15	2 42 14		

Month.	Double Altitudes of the Sun:	Times by Chron. Earnshaw. Forenoon.	Afternoon.	Comparison of the Chronometers with *Earnshaw*.	Remarks.
	°	h. ′ ″	h. ′ ″	h. ′ ″	
March 22	98 U. L.....	9 26 04	2 56 19	*Earn.* 12 11 12	
	98 L. L.....	9 28 13	2 54 09·5	391. 7 52 43	
	100 U. L.....	9 30 03·5	2 52 19	4 18 29	
	100 L. L.....	9 32 13	2 50 10		
	102 U. L.....	9 34 03	2 48 19·5		
	102 L. L.....	9 36 12·5	2 46 10·5		
	104 U. L.....	9 38 03·5	2 44 19		
	104 L. L.....	9 40 13	2 42 10		

For the Bearing of Mount Ophir and the Variation of the Compass:

1822 Month.	Times by Chronometer 391.	Angle between the Sun's nearest Limb and Mount Ophir.	Error of Sextant.	Remarks.
	h. ′ ″	° ′ ″	—	
Dec. 24	3 52 45	25 45 35	0· 40	
1823	*Earnshaw.*			
Jan. 10	5 53 08	24 43 37	0· 59	
30	5 47 47	20 14 36	1· 02	

Station at Pulo Gaunsah Lout.

between	*and*	Angles. ° ′ ″
Puleo Pinnee.....	Pulo Oolur.....	27 02 31
	Pulo Gaunsah.....	59 02 00
	Nellang Hill.....	90 25 00
	Oojong Tuan.....	101 47 00
	Luhwaun Looleo.....	107 12 00
	Tooleechemanah.....	115 22 00
	Pungalauren.....	120 59 30
	Kurboyee Hill.....	132 10 30
	Mount Ophir.....	145 07 31
	Peak N. E. of Ayer Bonghy.....	116 10 00
	2d Peak on the Range.....	102 10 00
	Tekeo Massang Hill.....	164 20 31

The *End* of the *Observations* made by the Assistant, *Mr. P. Lawrence.*

AT BENCOOLEN.

Observations by Mr. John Robinson.

For the LATITUDE.

1822 Month.	Names.	Double Meridian Altitude.	Error of Sextant.	Height of the Ther.	Height of the Barom.	Remarks.
		° ′ ″	′ ″	°	Inches.	
May 3	β Ursæ Maj.....	57 49 15	0 56,2	82	29,91	
	α Crucis.....	63 24 45	0 56,2	82	29,91	
	β Crucis.....	70 12 45	0 56,2	82	29,91	
	β Centauri.....	68 37 10	0 56,2	82	29,91	
8	α Centauri.....	68 25 15	1 1,25	80½	29,94	
24	Sun's L. L.....	130 35 00	1 1,25	87¼	29,92	
26	Sun's L L.....	129 51 15	1 1,25	90	29,90	
27	γ Crucis.....	75 24 45	1 5	81,9	29,84	
28	Sun's L. L.....	129 10 00	1 5	91,2	29,91	
30	γ Ursæ Maj.....	63 7 00	1 5	80	29,91	
	β Crucis.....	70 11 30	1 5	81	29,90	
June 4	Sun's L. L.....	127 10 5	1 5	90	29,91	
5	Sun's L. L.....	126 56 15	1 5	90	29,90	

For the TIME, LONGITUDE, *and* RATES *of* CHRONOMETERS.

Month.	Double Altitudes of the Sun.	Times by Chronometer No. 391.	Error of Sextant.	Comparison of the Chrnometers with 391. No. 397.	Comparison of the Chrnometers with 391. *Earn.*	Remarks.
	°	h. ′ ″	′ ″	h. ′ ″	h. ′ ″	
April 20	86 32 20 U. L..	1 21 26	1 40	9 56 0	9 54 0	These Observations were taken on our arrival at Bencoolen from Madras, at a station about 250 feet N.E. of the Old Government House.
	85 30 00 U. L..	23 39		10 5 56,5	10 6 16,5	
				0 9 56,5	0 12 16,5	
23	57 00 30 L. L..	18 23 18	0 37,5	10 28 0	10 29 0	
	58 00 35 L. L..	25 24		10 38 33	10 41 28,5	
				0 10 33	0 12 28,5	
30	62 19 00 L. L..	18 34 22	0 56,2	12 20 0	12 21 0	
	63 1 50 L. L..	35 52		12 32 1,5	12 33 57¼	
	63 56 15 L. L..	37 37,5		0 12 1,5	9 12 57¼	
May 5	45 58 45 L. L..	17 59 41	1 1,25	10 24 0	10 24 30	
	46 59 55 L. L..	18 1 51		10 36 48,5	10 37 32	
	47 48 15 L. L..	18 1 35		0 12 48,5	0 13 2	
6	57 35 30 L. L..	18 24 36	1 1,25	10 21 0	10 21 30	
	58 16 15 L. L..	26 3		10 34 00	10 34 34	
	49 15 L. L..	27 15		0 13 00	0 13 4	

Month.	Double Altitudes of the Sun.	Times by Chronometer No. 391.	Error of Sextant.	Comparison of the Chronometers with 391.		Remarks.
				No. 307.	*Earn.*	
	° ′ ″	*h.* ′ ″	′ — ″	*h.* ′ ″	*h.* ′ ″	
May 7	49 48 15 L. L..	18 7 55	1 1,25	10 32 0	10 32 30	
	50 41 45 L. L..	9 49		10 45 10	10 45 34	
	51 24 45 L. L..	11 23		0 13 10	0 13 4	
8	68 15 00 L. L..	18 47 58	1 1,25	10 23 0	10 22 0	
	68 50 50 L. L..	49 19		10 36 20½	10 35 6	
	69 34 00 L. L..	50 51		0 13 20½	00 13 6	

Month.	Double Altitudes of the Sun.	Times by Chron. 391. Forenoon.	Times by Chron. 391. Afternoon.	Comparison of the Chronometers with No. 391.		Remarks.
				No. 397.	*Earn.*	
	°	*h.* ′ ″	*h.* ′ ″	*h.* ′ ″	*h.* ′ ″	
May 13	104 00 U. L.....	8 9 10	12 23 15	10 5 30	10 6 00	
	104 00 L. L.....	11 51	20 38	10 19 41	10 19 13	
	106 00 U. L.....	14 15	18 12,5	00 14 11	00 13 13	
	106 00 L. L.....	16 53	15 36			
	108 00 U. L.....	19 12,5	13 13,5			
	108 00 L. L.....	21 54	10 31,5			
14	100 00 U. L.....	7 59 53,5	12 32 28,5	10 31 30	10 32 00	
	100 00 L. L.....	8 2 27,5	29 45	10 45 46	10 45 12	
	102 00 U. L.....	4 45	27 25	00 14 16	00 13 12	
	102 00 L. L.....	7 21	24 50			
	104 00 U. L.....	9 42	22 35			
	104 00 L. L.....	12 21	19 55			
	106 00 U. L.....	14 45,5	17 32,5			
	106 00 L. L.....	17 26,5	14 50,5			
	108 00 U. L.....	19 57	12 19,5			
	108 00 L. L.....	22 38	9 36			
	110 00 U. L.....	25 7,5	7 7,5			
	110 00 L. L.....	27 54,5	4 24,5			
15	102 00 L. L.....	8 7 55	12 24 7	10 27 30	10 28 00	
	104 00 U. L.....	10 22	21 48	10 41 54	10 41 12	
	104 00 L. L.....	13 12	19 8	00 14 24	00 13 12	
	106 00 U. L.....	15 21	16 45,5			
	106 00 L. L.....	18 1,5	14 2,5			
	108 00 U. L.....	20 32,5	11 28,5			
	108 00 L. L.....	23 17	8 44			
	110 00 U. L.....	25 48,5	6 14,5			
	110 00 L. L.....	28 32	3 30			

1823 Month.	Double Altitudes of the Sun.	Times by Chronometer No. 391.	Error of Sextant.	Comparison of the Chronometers with 391.		Remarks.
		No. 391.		No. 397.	*Earn.*	
	° ′ ″	*h.* ′ ″	′ — ″		*h.* ′ ″	
April 11	121 00 00 U. L..	17 28 8			10 20 00	These Observations taken on our arrival at Bencoolen, from *Gaunsah Lout*—the Station in Capt. Salmond's Garden, 300 yards S. S. E. of Fort Marlbro'.
	121 00 00 L. L..	30 29			5 40 53	
	123 00 00 U. L..	32 36	+0·20		4 39 7	
	123 00 00 L. L..	34 57				
	125 00 00 U. L..	37 4				
	125 00 00 L. L..	39 25				
13	119 00 00 U. L..	17 24 4			10 23 00	
	119 00 00 L. L..	26 24,5			5 42 50	
	121 00 00 U. L..	28 34	0·20		4 40 10	
	121 00 00 L. L..	30 55				
	123 00 00 U. L..	32 59				
	123 00 00 L. L..	35 21				

Month.	Double Altitudes of the Sun.	Times by Chronometer *Earnshaw*.	Error of Sextant.	Comparison of the Chronometers with *Earnshaw*.		Remarks.
					No. 391.	
	° ′ ″	*h.* ′ ″	′ — ″	No. 397.	*h.* ′ ″	
April 29	114 00 00 U. L..	20 49 53	+0·2,5		8 57 00	These Observations were taken at a Station in Captain Watson's Garden, about 900 yards South of Fort Marlbro.'
	115 00 00 U. L..	52 20			5 24 56	
	116 00 00 U. L..	54 42,5			3 32 4	
30	115 00 00 U. L..	20 53 13	0·2,5		8 58 00	
	115 30 00 U. L..	54 25			5 25 27	
					3 32 33	
May 1	108 00 00 U. L..	20 37 12	0·2,5		8 41 00	
	108 30 00 U. L..	38 22			5 7 57	
	109 00 00 U L..	39 35			3 33 3	
2	120 00 00 U. L..	21 7 46	0·2,5		10 45 00	
	120 30 00 U. L..	9 4,5			7 11 24	
	121 00 00 U. L..	10 25			3 33 36	
3	105 30 00 U. L..	20 32 43	0·5,8		10 45 00	
	106 00 00 U. L..	33 54			7 10 49,5	
	106 30 00 U. L..	35 8			3 34 10,5	
4	120 33 30 U. L..	21 11 22	0·5·8		10 45 00	
	121 3 00 U. L..	12 41			7 10 19	
	121 31 20 U. L..	13 57,5			3 34 41	

Month.	Double Altitudes of the Sun.	Times by Chronometer *Earnshaw*.	Error of Sextant.	Comparison of the Chronometers with *Earnshaw*.		Remarks.
				No. 397.	No. 391.	
	° ′ ″	*h.* ′ ″	′ ″		*h.* ′ ″	
May 5	88 42 15 U. L..	19 55 23,5	+0 9,2		10 46 00	
	88 42 15 L. L..	57 46			7 10 54	
					3 35 6	
6	88 21 10 U. L..	19 55 13	0 9,2		10 48 00	
	88 21 10 L. L..	57 37			7 12 25	
					3 35 35	
7	96 20 40 U. L..	20 14 13	—0 3,1		10 48 00	
	96 20 40 L. L..	16 39,5			7 11 59	
					3 36 1	
8	96 3 45 U. L..	20 14 19	0 3,1		10 47 00	
	96 3 45 L. L..	16 45			7 10 32	
					3 36 28	
9	95 51 5 U. L..	20 14 31	+0 3,7		10 48 00	
	95 51 5 L. L..	17 00			7 11 5	
					3 36 55	
10	95 53 45 U. L..	20 15 25	0 3,7		10 48 00	
	95 53 45 L. L..	17 53,5			7 11 5	
					3 36 55	

For the VARIATION *of the* COMPASS *at* BENCOOLEN.

1822 Month.	Times by Chronometer No. 391.	Bearing of the Sun by Theodolite.	Remarks.
	h. ′ ″	°	
May 26	4 2 20	N. 290 } Right Limb.	At Sun set.
	5 30	N. 289¼ }	

At RAT ISLAND.

Observations for the LATITUDE.

Month.	Names.	Double Meridian Altitude.	Error of Sextant.	Height of the		Remarks.
				Therm.	Barom.	
	°	° ′ ″	′ ″	°	Inches.	
May 16	β Crucis.....	70 20 15	1 1,25	80	29,83	Place of Observation
	η Ursæ Maj.....	71 59 00	1 1,25	80	29,86	near the Wharf at the
	β Centauri.....	68 45 00	1 1,25	80	29,84	North End of the Island.

For the TIME *and* LONGITUDE *of* RAT ISLAND.

Month.	Double Altitude of the Sun.	Times by Chronometer No. 391.		Comparison of the Chronometers with No. 391:	Remarks.
		Forenoon.	Afternoon		
	°	*h.* ′ ″	*h.* ′ ″	*h.* ′ ″	
May 16	105 U. L.....	8 13 51	12 18 37	391. 11 28 00	Place of Obser-
	105 L. L.....	8 16 33	12 15 56	397. 11 37 11,5	vation as above.
				0 9 11,5	
				391. 11 30 00	
				Earn. 11 41 55	
				0 11 55	

For the VARIATION *of the* COMPASS *at* RAT ISLAND.

1822 Month.	Times by Chronometer No. 391.	Bearing of the Sun by the Theodolite.	Remarks.
	h. ′ ″	°	
May 17	4 28 30	N. 69½—Right Limb.	Sun Rise.

Observations at Pulo Panjong.

For the LATITUDE.

Month.	Names.	Double Meridian Altitude.	Error of Sextant.	Height of the		Remarks.
				Ther.	Barom.	
		h. ° ′	′ ″	°	Inches.	
Sept. 3	α Lyræ.....	103 9 30	0. 45	79,2	29,80	These Observations were
5	α Lyræ.....	103 11 30	1. 7,5	79,2	29,81	taken, at a Station about
	Fomalhaut.....	118 35 5	1. 7,5	79,2	29,85	120 yards S. E. of Mr.
11	α Lyræ.....	103 10 45	1. 7,5	85,4	29,94	Prince's Bungalow.
13	α Lyræ.....	103 10 45	1. 7.5	81,5	29,92	
	α Pavonis.....	65 5 15	1. 7,2	81,5	29,90	
	α Cygni.....	91 9 00	1. 7,2	81	29,92	
	Fomalhaut.....	118 34 00	1. 7,2	81	29,93	
17	α Pavonis.....	65 6 30	1. 15	80	29,90	
	α Cygni.....	91 8 30	1. 15	80	29,93	

For the TIME, LONGITUDE, *and* RATES *of* CHRONOMETERS.

Month.	Double Altitudes of the Sun.	Times by Chronometer No. 397.	Error of Sextant.	Comparison of the Chronometers.		Remarks.
	° ′	*h.* ′ ″	′ ″		*h.* ′ ″	
Nov. 1	88 00 U. L...	19 37 1				These Observations
	90 00 U. L...	41 17		No. 397.	10 51 00	were taken within a few
	92 00 U. L...	45 34		No. 391.	9 57 7	yards of Mr. Prince's
	88 00 L. L...	19 39 19	1 12,5		00 53 53	Bungalow.
	90 00 L. L...	43 35,5		No. 397. *Earnshaw.*	10 52 00	
	92 00 L. L...	47 53			11 12 14,5	
					00 20 14,5	

1822 Month.	Double Altitudes of the Sun.	Times by Chron. No. 397. Forenoon.	Afternoon.	Comparison of the Chronometers with No. 397.		Remarks.
	°	h. ′ ″	h. ′ ″		h. ′ ″	
Nov. 3	122 00 U. L....	8 52 54,75	12 16 00,5	No. 397.	10 51 00	
				No. 391.	9 56 57	
	122 00 L. L....	55 25	13 29,25		00 54 3	
	124 00 U. L....	57 41	11 16,5			
	124 00 L. L....	9 00 18,5	8 44	No. 397.	10 52 00	
				Earnshaw.	11 12 25,75	
	126 00 U. L....	2 27	6 29,5		00 20 25,75	
	126 00 L. L....	5 7,75	3 50,5			
6	116 00 U. L....	8 40 57	12 28 9,5	No. 397.	10 51 00	
				No. 391.	9 56 24	
	116 00 L. L....	43 29,75	25 39,75		00 54 36	
	118 00 U. L....	45 40	23 27,75			
	118 00 L. L....	48 12,25	20 55,25	No. 397.	10 52 00	
				Earnshaw.	11 12 54,75	
	120 00 U. L....	50 23,75	18 43,5		00 20 54,75	
	120 00 L. L....	52 59,25	16 9			
				No. 397.	10 51 00	
				No. 391.	9 54 55	
					00 56 5	
12	118 00 U. L....	8 50 22	12 19 49			
				No. 397.	10 52 00	
	120 00 U. L....	8 53 1	17 9,75	*Earnshaw.*	11 13 58,5	
					00 21 58,5	
				No. 397.	10 52 00	
				No. 391.	9 55 43	
13	122 00 U. L....	9 1 20	12 6 20		00 56 17	
	124 00 U. L....	4 7	9 7	No. 397.	10 53 00	
				Earnshaw.	11 15 14	
					00 22 14	

For the Time and Longitude of Nattal.

Month.	Double Altitudes of the Sun.	Times by Chron. No. 397. Forenoon.	Afternoon.	Comparison of the Chronometers with 397.		Remarks.
				No. 391.	*Earnshaw.*	
	°	h. ′ ″	h. ′ ″	h ′ ″	h ′ ″	
Dec. 2	86 00 U. L....	7 50 22	13 32 4	10 53 00	10 54 00	Station Captain
				95 2 52	11 20 7	Crisp's Bungalow
	86 00 L. L....	52 53	29 34	1 00 8	00 26 7	at about 300 yards
						N. of the Fort Flag
2	128 00	19 46 33	*Error of Sextant*	11 12 00	11 13 00	Staff.
				10 11 42	11 39 18	
		50 14	— 45	1 00 18	00 26 18	

1823 / Month.	Double Altitudes of the Sun.	Times by Chronometer *Earnshaw*.	Error of Sextant.	Comparison of the Chronometer with *Earnshaw*.		Remarks.
	° ′	h. ′ ″	′ ″	No. 397.	No. 391. h. ′ ″	
March 27	123 00 L. L....	2 2 55	+0·0,62		6 32 50	Observations taken at Nattal, on returning from *Gaunsah Lout*.
	123 00 U. L....	5 5			2 12 00	
	121 00 L. L....	6 55,5			4 20 50	
	121 00 U. L....	9 5,5				
	119 00 L. L....	10 55,75				
	119 00 U. L....	13 6				
	117 00 L. L....	14 56,75				
	117 00 U. L....	17 5,75				
28	123 00 L. L....	2 2 51,75	0·0,62		6 31 41,75	
	123 00 U. L....	5 1			2 10 00	
	121 00 L. L....	6 53			4 21 41,75	
	121 00 U. L....	9 2,75				
	119 00 L L....	10 54,25				
	119 00 U. L....	13 5				
	117 00 L. L....	14 55				
	117 00 U. L....	17 5				
28	102 00 U. L....	21 33 18	1·00		6 43 31	
	102 00 L. L....	35 28			2 12 00	
	104 00 U. L....	37 17			4 31 31	
	104 00 L. L....	39 28				
	106 00 U. L....	41 17				
	106 00 L. L....	43 29				

For the TIME *and* LONGITUDE *of the S. E. Point of Pulo* PINNEE.

1822 / Month.	Double Altitudes of the Sun.	Times by Chronometer No. 397.	Error of Sextant.	Comparison of the Chronometer with 397.	Remarks.
	° ′	h. ′ ″	′ ″	h. ′ ″	
Dec. 9	101 00 U. L....	12 56 27		No. 397. 10 51 00	
	101 00 L. L....	12 59 11		No. 391. 9 49 26	
	99 00 U. L....	1 1 27	0· 45,5	1 1 34	
	99 00 L. L....	1 4 11		No. 397. 10 52 00	
				Earn. 11 19 26¼	
				00 27 26¼	
	87 00 U. L.	7 57 45			
	87 00 L. L.	8 00 22		No. 397. 10 58 00	
	89 00 U. L.	8 2 32		No. 391. 9 56 15	
	89 00 L. L.	8 5 8		1 1 45	
	91 00 U. L.	8 7 21			
	91 00 L. L.	8 9 56			

Forenoon.

1822 Month.	Double Altitudes of the Sun.		Times by Chronometer No. 397.	Error of Sextant.	Comparison of the Chronometer with 397.	Remarks.
	°		h. ′ ″	′ ″	h. ′ ″	
Dec. 10	87 00 L. L	Afternoon.	1 33 21	0. 45,5	No. 397. 10 59 00	
	87 00 U. L		1 30 56		*Earn.* 11 26 39	
	89 00 L. L		1 28 46		00 27 39	
	89 00 U. L		1 26 12			
	91 00 L. L		1 24 00			
	91 00 U. L		1 21 22			
10	87 00 U. L....		19 58 27	0· 45,5		
	87 00 L. L....		20 1 1			
			Earnshaw.			
11	82 00 U. L...		20 15 18	0· 45		
	82 00 L. L....		17 51			
13	80 00 L. L....		2 16 51			
	80 00 U. L....		19 19			
	78 00 L. L....		21 29	0· 45		
	78 00 U. L....		24 00			
	76 00 L. L....		26 8			
	76 00 U. L....		28 38			
14	95 00 L. L....		1 41 28			
	95 00 U. L....		44 10	0. 45,8		
	93 00 L. L....		46 25			
	93 00 U. L....		49 3			
	91 00 L L....		51 17			
	91 00 U. L....		53 55			
14	89 00 U. L....		20 34 36			
	89 00 L. L....		37 13	0· 45		
	91 00 U. L....		39 24			
	91 00 L. L....		42 2			
18	97 00 U. L....		20 57 17	1· 8		
	97 00 L. L....		59 58			
19	96 00 U. L....		20 55 33	1· 8		
	96 00 L. L....		58 15			
20	99 00 U. L....		21 3 46	1· 5		
	99 00 L. L...		6 31			

AT

Pulo GAUNSAH LOUT,

108,78 *Seconds*

North of the Equator.

Experiments for ascertaining The Length of the Pendulum.

1823. 15*th February* A. M.

Hygro. Begin 6¼ *moist.* End 6¼ *moist.* Barom. Begin 30,158 End 30,183 *Inches.*

Temperature.	Disc. Hid.	Disc. Reappeared.	Arc of Vibration
°	h. ′ ″	h. ′ ″	
80,5	7 19 36	7 19 49	1,45
80,7	7 31 10	7 31 27	1,375
80,8	7 42 48	7 43 1	1,275
81	7 54 25	7 54 39	1,175
81,2	8 6 2	8 6 10	1,075

Hygro. Begin 5¾ *moist.* End 5¾ *moist.* Barom. Begin 30,188 End 30,198

80,5	8 21 19	8 21 30	1,375
80,7	8 32 53	8 33 7	1,275
80,8	8 44 28	8 44 45	1,175
81	8 56 8	8 56 21	1,1
81,2	8 7 45	9 8 1	1,025

Hygro. Begin 22¾ *dry.* End 31 *dry.* Barom. Begin 30,203 End 30,193

90,6	12 7 20,5	12 7 27	1,3
91,3	12 18 40	12 18 49	1,2
92,4	12 30 3	12 30 10	1,1
93,5	12 41 20	12 41 29	1,05
94	12 52 40	12 52 49	0,975

Hygro. Begin 38¼ *dry.* End 41 *dry.* Barom. Begin 30,158 End 30,148

94,3	2 11 24	2 11 35	1,325
94	2 22 42	2 22 52	1,225
94	2 33 58,5	2 34 11	1,15
93,6	2 45 16	2 45 29	1,075
93,3	2 56 37	2 56 50	1,00

16*th February* A. M.

Hygro. Begin 3 *dry.* End 2 *dry.* Barom. Begin 30,148 End 30,173

75,7	6 48 12,5	6 48 27	1,325
81	6 59 49	7 00 4½	1,225
81,3	7 11 24,5	7 11 41	1,15
81,6	7 23 1	7 23 21	1,075
81,6	7 34 38,5	7 34 57¼	1,00

16*th February* A. M.

Hygro. Begin 3½ *dry.* End 7 *dry.* Barom. Begin 30,187 End 30,198 *Inches.*

Temperature.	Disc. Hid.	Disc. Reappeared.	Arc of Vibration
°	h. ′ ″	h. ′ ″	
82,8	8 43 8,5	8 43 19½	1,375
83,5	8 54 40	8 54 53	1,275
83,7	9 6 13	9 6 28	1,175
83,8	9 17 47	9 18 3	1,1
83,7	9 29 23	9 29 38	1,025

Hygro. Begin 7¼ *dry.* End 8¾ *dry.* Barom. Begin 30,193 End 30,195

83,7	9 38 36	9 38 49	1,4
83,6	9 50 5,5	9 50 21	1,325
83,7	10 1 40,5	10 1 52	1,225
83,7	10 13 16	10 13 30	1,125
83,8	10 24 46,5	10 25 3	1,075

Hygro. Begin 32¼ *dry.* End 39½ *dry.* Barom. Begin 30,198 End 30,178

93,8	12 29 22	12 29 33	1,2
93,4	12 40 40	12 40 51	1,125
94	12 51 59	12 52 13	1,05
95	1 3 18	12 3 31	0,975
95,8	1 14 36	12 14 49	0,925

Hygro. Begin 47 *dry.* End 47¼ *dry.* Barom. Begin 30,145 End 30,122

96,8	2 30 26	2 30 36	1,5
96,7	2 41 36	2 41 49	1,4
96,8	2 52 51	2 53 3	1,3
96,7	3 4 00	3 4 16	1,225
95,8	3 15 17,5	3 15 33	1,150

17*th February* A. M.

Hygro. Begin 3¼ *dry.* End 4½ *dry.* Barom. Begin 30,152 End 30,167

81	7 56 5	7 56 19	1,275
81,2	8 7 42	8 7 57	1,2
81,2	8 19 20	8 19 39	1,1
81,3	8 30 58	8 31 17	1,025
81,5	8 42 38,5	8 42 55	0,95

17th February A. M.

Hygro. Begin 4¼ *dry.* End 4¾ *dry.* Barom. Begin 30,165 End 30,171 *Inches*

Temperature.	Disc. Hid.			Disc. Reappeared.			Arc of Vibration
°	h.	′	″	h.	′	″	
81,8	8	55	47,5	8	56	2	1,425
82	9	7	22,5	9	7	36	1,325
82,4	9	18	58	9	19	11	1,2
82,3	9	30	34,5	9	30	49	1,15
82,3	9	42	10,5	9	42	27½	1,05
Hygro. Begin 19 *dry.* End 30½ *dry.* Barom. Begin 30,159 End 30,153							
88,6	11	53	11	11	53	27	1,4
89	12	4	43	12	5	1	1,3
89,6	12	16	15,5	12	16	27	1,2
91	12	27	38	12	27	51	1,125
92,6	12	39	00,75	12	39	11	1,05
Hygro. Begin 41¼ *dry.* End 42¾ *dry.* Barom. Begin 30,128 End 30,108							
89,8	2	15	48,5	2	15	59	1,325
89,4	2	27	10,5	2	27	23	1,25
88,6	2	38	36,75	2	38	49	1,2
87	2	50	4,5	2	50	19	1,125
86,2	3	1	36,25	3	1	50	1,05
Hygro Begin 37¾ *dry.* End 35¼ *dry.* Barom. Begin 30,093 End 30,093							
85,4	4	13	8	4	13	19	1,45
85,4	4	24	36,5	4	24	49	1,35
85,6	4	36	8,5	4	36	22½	1,25
85,8	4	47	42,5	4	48	7	1,125
85,3	4	59	26,5	4	59	41	1,075
18th February A. M. Hygro. Begin 8¾ *dry.* End 8½ *dry.* Barom Begin 30,103 End 30,103							
79,8	6	37	12,5	6	37	32	1,375
79	6	48	51,5	6	49	12	1,3
79	7	00	30	7	00	51	1,2
79,2	7	12	6	7	12	33	1,125
79,4	7	23	51,5	7	24	15	1,025

18th February A. M.

Hygro. Begin 7½ *dry.* End 8¾ *dry.* Barom. Begin 30,145 End 30,135 *Inches.*

Temperature.	Disc. Hid.			Disc. Reappeared.			Arc of Vibration
°	h.	′	″	h.	′	″	
81	8	47	17,5	8	47	33	1,475
81	8	58	52,5	8	59	8¾	1,375
81	9	10	28,75	9	10	45	1,25
81,2	9	22	8,25	9	22	24¾	1,175
81,4	9	33	46,25	9	34	3	1,1
Hygro. Begin 11¾ *dry.* End 18¼ *dry.* Barom. Begin 30,151 End 30,152							
83	10	45	8,5	10	45	52½	1,375
83,8	10	57	11,5	10	57	24¾	1,3
84,6	11	8	44,5	11	8	57	1,2
85,9	11	20	6,25	11	20	29	1,125
87,7	11	31	46,5	11	31	59	1,025
Hygro. Begin 42¾ *dry.* End 49¼ *dry.* Barom. Begin 30,148 End 30,135							
94,8	12	46	38,25	12	46	48¾	1,45
95,4	12	57	52,5	12	58	3	1,35
95,4	1	9	8,5	1	9	20¼	1,25
96	1	20	24,25	1	20	37	1,175
96,2	1	31	40,5	1	31	53½	1,1
Hygro. Begin 54¼ *dry.* End 55 *dry.* Barom. Begin 30,113 End 30,093							
97	3	00	8,5	3	00	23	1,45
96,6	3	11	23	3	11	36½	1,35
95,6	3	22	37	3	22	52½	1,275
96	3	33	54,5	3	34	11	1,175
95,8	3	45	11	3	45	30	1,1
19th February A M. Hygro. Begin 18¼ *dry.* End 15½ *dry.* Barom. Begin 30,11 End 30,14							
81,7	6	35	18,5	6	36	35½	1,45
81,7	6	46	52,5	6	47	15	1,35
81,8	6	58	32,5	6	58	51	2,275
81,7	7	10	3	7	10	31	1,175
81,6	7	20	48,5	7	21	12	1,1

19th February A. M.

Hygro. Begin 8½ *dry.* End 9 *dry.* — Barom. Begin 30,148 End 30,152 *Inches.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
81,8	8 48 6,5	8 48 17	1,525
82.2	8 59 42	8 59 53	1,4
82,4	9 11 18	9 11 32½	1,3
82,6	9 22 54,2	9 23 11	1,2
82,8	9 34 32	9 34 49	1,125

Hygro. Begin 13¼ *dry.* End 20¼ *dry.* — Barom. Begin 30,145 End 30,143

84,8	10 51 28	10 51 41	1,3
85,6	11 3 2	11 3 14½	1,2
87	11 14 34,5	11 14 48	1,125
88,3	11 26 6,25	11 26 19	1,05
89,8	11 37 36,5	11 37 51	0,975

Hygro. Begin 40¼ *dry.* End 49½ *dry.* — Barom. Begin 30,143 End 30,145

95,8	12 45 2	12 45 15	1,175
96	12 56 20,5	12 56 33	1,1
96,6	1 7 41	1 7 54½	1,025
97	1 18 58,5	1 19 13	0,975
97,6	1 30 18,2	1 30 33	0,9

Hygro. Begin 52¼ *dry.* End 51 *dry.* — Barem. Begin 30,117 End 30,103

94,6	2 34 44	2 34 54¾	1,475
94,3	2 46 00,5	2 46 13	1,375
93,8	2 57 20,5	2 57 33	1,275
93,7	3 8 40,5	3 8 57	1,175
92	3 20 1	3 20 21	1,125

20th February A. M.

Hygro. Begin 12½ *dry.* End 12½ *dry.* — Barom. Begin 30,130 End 30,138

81,6	7 44 4,5	7 44 17	1,4
81,8	7 55 44	7 55 57	1,3
82,3	8 7 22,5	8 7 35	1,2
82,4	8 19 00	8 19 16½	1,1
82,4	8 30 39	8 30 57	1,025

20th February A. M.

Hygro. Begin 12¼ dry. End 12¼ dry. — Barom. Begin 30,138 End 30,133 *Inches.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. '	Arc of Vibration
°			
82,3	8 42 8	8 42 19	1,5
82,2	8 53 42,5	8 53 55	1,4
82,3	9 5 20	9 5 33	1,3
82,2	9 17 2,75	9 17 16¼	1,2
82	9 28 36	9 28 51	1,125

Hygro. Begin 38 *dry.* End 31¼ *dry.* — Barom. Begin 30,148 End 30,123

91	11 49 52,25	11 50 3	1,6
90	12 1 12	12 1 25	1,5
89,2	12 12 36	12 12 49	1,4
89,2	12 23 54	12 24 17	1,3
89,4	12 35 22	12 35 35	1,2

Hygro. Begin 46¼ *dry.* End 54¼ *dry.* — Barom. Begin 30,133 End 30,128

94	1 41 22,5	1 41 35	1,575
94	1 52 38	1 52 51	1,475
94,3	2 3 56,5	2 4 8½	1,375
94,8	2 15 10, 5	2 15 27	1,275
95,4	2 26 30,5	2 26 45¼	1,175

Hygro. Begin 53¼ *dry.* End 51 *dry.* — Barom. Begin 30,102 End 30,093

88,3	3 57 44,5	3 58 1	1,475
91,6	4 9 6,5	4 9 23	1,375
89,8	4 20 32,25	4 20 49	1,275
88,3	4 32 00	4 32 22	1,2
87,2	4 43 30	4 43 53	1,125

22d February A. M.

Hygro. Begin 14¼ *dry.* End 14¾ *dry.* — Barom. Begin 30,183 End 30,192

81,5	8 50 40	8 50 49	1,675
81,8	9 2 14,5	9 2 24	1,525
81,8	9 13 50,25	9 14 3	1,4
82	9 25 28,5	9 25 43	1,3
82,2	9 37 8,5	9 37 24½	1,2

22d February A. M.

Hygo. Begin 19 *dry.* End 20¼ *dry.* Barom. Begin 30,191 End 30,188 *Inches.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
83,3	10 45 52,5	10 46 11	1,5
84,2	10 57 36,5	10 57 47	1,375
85,3	11 9 10,5	11 9 21½	1,3
86,4	11 20 44,5	11 20 56¾	1,2
87,6	11 32 17,25	11 32 29	1,125

Hygro. Begin 46¼ *dry.* End 52¼ *dry.* Barom. Begin 30,168 End 30,153

93,2	12 40 42,5	12 40 50½	1,5
92,8	12 52 4,5	12 52 13¾	1,375
92,8	1 3 28,5	1 3 38¼	1,275
92,2	1 14 52	1 15 4¼	1,175
92,5	1 26 18,5	1 26 31	1,075

Hygro. Begin 55 *dry.* End 58½ *dry.* Barom. Begin 30,133 End 30,098

93,5	2 35 35	2 35 42½	1,65
93,3	2 46 50,5	2 47 00,5	1,55
92,8	2 58 9,5	2 58 20½	1,425
93	2 9 28	3 9 39	1,35
93,8	2 20 48,25	3 21 2¾	1,25

23d February A. M.

Hygro. Begin 16½ *dry.* End 16½ *dry.* Barom. Begin 30,138 End 30,145

80,7	7 34 46,5	7 35 1	1,325
81	7 46 26,5	7 46 42	1,225
81,3	7 58 8,5	7 58 22½	1,15
81,3	8 9 48,5	8 10 7	1,05
81,6	8 21 30,5	8 21 49	0,975

Hygro. Begin 17 *dry.* End 17¼ *dry.* Barom. Begin 30,148 End 30,148

81,8	8 39 54,25	8 40 6¾	1,425
82,2	8 51 32,5	8 51 45	1,325
82,3	9 3 13	9 3 28½	1,225
82,8	9 14 52,25	9 15 5	1,125
82,5	9 26 34,25	9 26 49	1,05

23d February A. M.

Hygro. Begin 30 *dry.* End 43¾ *dry.* Barom. Begin 30,136 End 30,123 *Inches.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
89,2	11 33 54,25	11 34 4½	1,375
90,8	11 45 22,5	11 45 32½	1,275
91,7	11 56 50,5	11 57 1	1,175
91,8	12 8 18	12 8 29	1,075
92	12 19 44,25	12 19 57¼	1,0

Hygro. Begin 54¾ *dry.* End 57 *dry.* Barom. Begin 30,083 End 30,073

96,8	1 49 44	1 49 52¾	1,425
95,3	2 00 58,25	2 1 11	1,325
96,4	2 12 20,25	2 12 31	1,225
96	2 23 50	2 23 50	1,15
94,8	2 35 1,5	2 35 13	1,075

Hygro. Begin 55¼ *dry.* End 54¼ *dry.* Barom. Begin 30,053 End 30,050

91	4 10 6,5	4 10 17	1,525
92,6	4 21 26,5	4 21 39	1,425
91	4 32 48	4 33 3	1,325
89,2	4 44 13	4 44 29	1,225
88,2	4 55 40	4 55 57	1,15

24th February A. M.

Hygro. Begin 21¼ *dry.* End 20 *dry.* Barom. Begin 30,073 End 30,088

80,8	6 22 13	6 22 26½	1,5
80,7	6 33 51	6 34 6½	1,4
80,8	6 45 34	6 45 48½	1,275
81	6 57 15	6 57 29	1,2
81,2	7 8 56,25	7 9 12¾	1,1

Hygro. Begin 23½ *dry.* End 26¼ *dry.* Barom. Begin 30,125 End 30,131

82,7	8 34 56,5	8 35 8½	1,375
82,8	8 46 36,5	8 46 51	1,25
82,8	8 58 16,5	8 58 33¼	1,15
83	9 10 00	9 10 18½	1,075
83	9 21 44,5	9 22 3	1,00

24th February A. M.

Hygro. Begin 28 *dry.* End 33¼ *dry.* — Barom. Begin 30,133 End 30,118 *Inches.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
84,0	10 42 52,5	10 43 2½	1,4
84,3	10 54 32,5	10 54 43	1,3
85,8	11 6 10,5	11 6 21	1,2
87,2	11 17 50	11 18 1	1,1
88,8	11 29 30	11 29 41	1,0

Hygro. Begin 49¼ *dry.* End 54½ *dry.* — Barom. Begin 30,093 End 30,077

93,0	12 52 6,5	12 52 17	1,325
93,2	1 3 32,5	1 3 45	1,2
94,2	1 14 58	1 15 11	1,125
95,3	1 26 20,5	1 26 35	1,05
97,8	1 37 42	1 37 57	0,975

Hygro. Begin 59 *dry.* End 51 *dry.* — Barom. Begin 30,053 End 30,048

97,2	2 43 12	2 43 23	1,375
97,5	2 54 28	2 54 42½	1,275
97,7	3 5 46,5	3 6 1	1,2
96,4	3 17 4,5	3 17 23	1,1
95,8	3 28 26,5	3 28 45	1,025

25th February A. M.

Hygro. Begin 1 *moist.* End 0 — Barom. Begin 30,083 End 30,113

79	8 21 58	8 22 9	1,425
79,4	8 33 38,5	8 33 52½	1,35
79,2	8 45 24	8 45 38½	1,25
79	8 57 00,5	8 57 25	1,15
79	9 8 46,5	9 9 13	1,05

Hygro. Begin 2 *dry.* End 00¾ *moist.* — Barom. Begin 30,113 End 30,111

79,8	10 18 19	8 18 29	1,45
80,3	10 30 12,5	10 30 14	1,35
80,7	10 41 44,5	10 41 55½	1,25
80,8	10 53 28,5	10 53 41	1,175
81,2	11 5 12,5	11 5 26½	1,075

25th February A. M.

Hygro. Begin 14¼ *dry.* End 22½ *dry.* — Barom. Begin 30,083 End 30,073 *Inchos.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
83,8	12 17 00,25	12 17 10½	1,3
84,5	12 28 38,25	12 28 47¼	1,2
84,7	12 40 14	12 40 26½	1,125
85	12 51 50,25	12 52 3	1,05
85,5	1 3 28	1 3 40¼	0,975

Hygro. Begin 32¼ *dry.* End 39¼ *dry.* — Barom. Begin 30,053 End 30,038

89,8	2 21 6,5	2 21 16	1,4
89,2	2 32 34	2 32 46	1,3
89,9	2 44 2	2 44 13	1,2
89,8	2 55 29	2 55 43	1,125
89,8	3 6 57	3 7 13	1,05

Hygro. Begin 40¼ *dry.* End 41 *dry.* — Barom. Begin 30,042 End 30,041

89,6	4 14 41	4 14 54	1,4
89	4 26 6 5	4 26 23	1,3
88 8	4 37 38	4 37 51	1,2
87,4	4 49 6,5	4 49 24	1,125
85,6	5 00 38,5	5 00 57	1,05

26th February. A. M.

Hygro. Begin 8½ *dry.* End 8½ *dry.* — Barom. Begin 30,023 End 30,023

80,8	6 31 36	6 31 55	1,25
80,8	6 43 19	6 43 42	1,175
80,5	6 55 00	6 55 23	1,1
80,7	7 6 44	7 7 7	1,0
80,8	7 18 28,5	7 18 55	0,95

Hygro. Begin 11¾ *dry.* End 15 *dry.* — Barom. Begin 30,043 End 30,053

82,5	8 35 18,5	8 35 34½	1,4
82,8	8 46 58	8 47 13	1,275
82,8	8 58 36,5	8 58 53	1,2
82,8	9 10 18,5	9 10 36½	1,1
82,6	9 22 2,5	9 22 21	1

26th February A. M.

Hygro. Begin 18¼ *dry.* End 27¼ *dry.* Barom. Begin 30,053 End 30,053 *Inches.*

Temperature.	Disc. Hid.			Disc. Reappeared.			Arc of Vibration
°	h.	′	″	h.	′	″	
83,7	10	49	32	10	49	43	1,375
84,2	11	1	8,5	11	1	20½	1,275
85	11	12	46	11	12	58	1,175
86	11	24	20,25	11	24	33	1,1
87	11	35	56	11	36	9	1,025

Hygro. Begin 47 *dry.* End 52¾ *dry.* Barom. Begin 30,048 End 30,035

90	12	44	8,25	12	44	19	1,3
92	12	55	32	12	55	45	1,225
93	1	6	58	1	7	9	1,125
94,2	1	18	22,25	1	18	35	1,05
94,8	1	29	45	1	29	59	0,975

Hygro. Begin 58 *dry.* End 58½ *dry.* Barom. Begin 30,023 End 30,003

95,8	2	38	24,5	2	38	37	1,275
95	2	49	42,5	2	49	58	1,2
95,2	3	1	3,5	3	1	17	1,1
94,5	3	12	22	3	12	40½	1,025
94,6	3	23	46	3	24	3	0,975

1st March A. M.

Hygro. Begin 5¾ *moist.* End 2 *moist.* Barom. Begin 30,029 End 30,035

79,2	6	55	24,5	6	55	40½	1,375
79,5	7	6	5	7	7	26½	1,275
79,7	7	18	53,5	7	19	12½	1,175
79,8	7	30	37,5	7	30	59	1,075
80,2	7	42	24,5	7	42	47	0,975

Hygro. Begin 00½ *dry.* End 00¾ *dry.* Barom. Begin 30,053 End 30,058

80,8	8	55	42,5	8	55	56,5	1,425
80,8	9	7	22,5	9	7	38,5	1,325
80,8	9	19	2	9	19	18,5	1,225
81	9	30	46,25	9	31	1,5	1,125
81¼	9	42	26,5	9	42	47	1,05

1st March A. M.

Hygro. Begin 6 *dry.* End 18¼ *dry.* Barom. Begin 30,063 End 30,061 *Inches.*

Temperature.	Disc. Hid.			Disc. Reappeared.			Arc of Vibration
°	h.	′	″	h.	′	″	
82,2	10	48	19,5	10	48	29	1,55
82,8	10	59	54,5	11	00	5	1,45
83,8	11	11	29,5	11	11	41	1,325
84,8	11	23	6,5	11	23	17	1,25
85,6	11	34	40,5	11	34	53	1,15

Hygro. Begin 42 *dry.* End 51 *dry.* Barom. Begin 30,038 End 30,033

92,5	12	55	24	12	55	32,5	1,425
93	1	6	46,25	1	6	58,5	1,325
93,5	1	18	10	1	18	21	1,225
94	1	29	34	1	29	45	1,19
94,2	1	40	58	1	41	9	1,075

Hygro. Begin 53¼ *dry.* End 54¼ *dry.* Barom. Begin 30,011 End 30,008

93	2	49	12,5	2	49	24	1,525
94,3	3	00	28,5	3	00	43	1,425
94,3	3	11	50,5	3	12	3	1,3
94,8	3	23	8	3	23	8	1,2
94,6	3	34	30	3	34	48,75	1,125

3d March A. M.

Hygro. Begin 28½ *moist.* End 28¾ *moist.* Barom. Begin 30,072 End 30,078

76,4	8	17	9,5	8	17	26,5	1,375
76,7	8	28	52	8	29	10,5	1,3
77,2	8	40	34,5	8	40	51	1,2
77,8	8	52	18,5	8	52	37	1,1
78,2	9	4	1,5	9	4	21,5	1,025

Hygro. Begin 19¼ *moist.* End 2 *dry.* Barom. Begin 30,093 End 30,088

80,5	10	50	10,25	10	50	24,75	1,375
81,25	11	1	47	11	2	4,75	1,275
82,2	11	13	28,25	11	13	44,25	1,175
83,2	11	25	7	11	25	24	1,075
84	11	36	45	11	37	1,75	1

3d March A. M.

Hygro. Begin 16 *dry.* End 23¼ *dry.* — Barom. Begin 30,063 End 30,040 *Inches.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
85,2	12 53 38,25	12 53 48,75	1,475
85,8	1 5 10,25	1 5 21	1,35
85 8	1 16 42,5	1 16 55	1,25
85,3	1 28 18,25	1 28 32,75	1,175
85	1 39 54	1 40 9	1,075

Hygro Begin 33 *dry.* End 38 *dry.* — Barom. Begin 30,023 End

88,6	3 1 42	3 1 53	1,45
89	3 13 9	3 13 20	1,35
89,8	3 24 37	3 24 51	1,25
90	3 36 6,5	3 36 21	1,175
89,8	3 47 35	3 47 51	1,1

Hygro. Begin 37½ *dry.* End 36½ *dry.* — Barom. Begin 30,011 End 30,013

86,4	5 7 36	5 7 49,5	1,35
86,8	5 19 4,25	5 19 21	1,225
85,8	5 30 37,25	5 30 53	1,175
85,4	5 42 8,5	5 42 29	1,1
84,8	5 53 45	5 54 7	1,025

4th March A M.

Hygro. Begin 20¾ *moist.* End 25 *moist.* — Barom. Begin 30,029 End 30,053

77,4	7 13 5,5	7 13 22	1,4
77,7	7 24 52	7 25 11	1,3
77,4	7 36 41,5	7 36 58,5	1,2
77,4	7 48 34,25	7 48 49	1,1
77,7	8 00 26,5	8 00 39	1,05

Hygro. Begin 26¾ *moist.* End 31 *moist.* — Barom. Begin 30,052 End 30,063

78	8 15 4	8 15 15	1,375
78,2	8 26 50,5	8 27 1	1,275
78,6	8 38 39,25	8 38 50	1,175
79,3	8 50 30	8 50 39	1,1
79,8	9 2 20	9 2 29	1

4th March A. M.

Hygro. Begin 29¼ *moist.* End 22 *moist.* — Barom. Begin 30,078 End 30,078 *Inches.*

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
82,8	10 55 24,5	10 55 36,25	1,375
83,8	11 7 3,75	11 7 16,75	1,25
84,4	11 18 42,5	11 18 56,5	1,175
84,3	11 30 22	11 30 35	1,1
84,8	11 42 00	11 42 17	1,025

Hygro. Begin 3¼ *moist.* End 5¾ *dry.* — Barom. Begin 30,033 End 30,033

85,6	2 4 34,25	2 4 44	1,4
85,6	2 16 8,25	2 16 16,5	1,3
86	2 27 43	2 27 50	1,2
85,8	2 39 18,25	2 39 26,75	1,125
85,3	2 50 51	2 51 3	1,05

Hygro. Begin 5 *dry.* End 3 *dry.* — Barom. Begin 30,015 End 30,008

82,2	4 18 22,5	4 18 31	1,4
82	4 30 00,25	4 30 8,5	1,3
81,8	4 41 35,5	4 41 47	1,225
81,8	4 53 18	4 53 28,5	1,15
82	5 4 56,5	5 5 10,5	1,075

9th March A. M.

Hygro. Begin 1 *moist.* End 3 *moist.* — Barom. Begin 30,127 End 30,143

79,7	6 46 18	6 46 30	1,475
80	6 57 57	6 58 10	1,375
80	7 9 39,5	7 9 53	1,275
80,2	7 21 22,5	7 21 37	1,175
80,3	7 33 8	7 33 23	1,075

Hygro. Begin 4 *dry.* End 10¼ *dry.* — Barom. Begin 30,151 End 30,155

81,8	8 52 34	8 52 46	1,325
81,8	9 4 17	9 4 30	1,225
81,8	9 16 2	9 16 15	1,125
81,8	9 27 48,25	9 28 2	1,05
81,8	9 39 35	9 39 52	0,95

9th March A. M.

Hygro. Begin 12½ *dry.* End 16 *dry.* Barom. Begin 30,153 End 30,133 *Inches.*

Temperature.	Disc. Hid.			Disc. Reappeared.			Arc of Vibration
°	*h.*	′	″	*h.*	′	″	
83	10	55	12	10	55	21	1,4
83	11	6	54	11	7	5	1,275
82,8	11	18	38	11	18	49	1,175
82,4	11	30	22	11	30	33	1,1
82,4	11	42	6	11	42	21	1,025

Hygro. Begin 15¼ *dry.* End 19½ *dry.* Barom. Begin 30,083 End 30,081

82,2	12	59	40	12	59	49	1,375
82,8	1	11	20	1	11	29,5	1,275
83,2	1	23	1,5	1	23	10,5	1,175
84	1	34	42	1	34	53	1,075
84,6	1	46	24,5	1	46	37,75	1

Hygro. Begin 21¼ *dry.* End 23 *dry.* Barom. Begin 30,068 End 30,073

85	2	56	14,25	2	56	25	1,325
85,2	3	7	52	3	8	2	1,225
85	3	19	30	3	19	41	1,15
84,8	3	31	7	3	31	22	1,05
84,2	3	42	50	3	43	3	1

10th March A. M.

Hygro. Begin 6½ *moist.* End 4¼ *moist.* Barom. Begin 30,113 End 30,138

81,4	7	24	3	7	24	11	1,5
81,7	7	35	40,5	7	35	50,5	1,4
82	7	47	9,75	7	47	30	1,3
82	7	59	2	7	59	12,5	1,2
82	8	10	42	8	10	53	1,125

Hygro. Begin 2¼ *moist.* End 0¼ *moist.* Barom. Begin 30,143 End 30,151

81,8	8	33	5	8	33	16	1,4
81,7	8	44	47,5	8	44	58	1,275
81,7	8	56	32,5	8	56	45	1,175
81,7	9	8	19	9	8	31	1,025
81,4	9	20	7	9	20	20	0,95

10th March A. M.

Hygro. Begin 13 *dry.* End 20¼ *dry.* Barom. Begin 30,148 End 30,133 *Inches.*

Temperature.	Disc. Hid.			Disc. Reappeared.			Arc of Vibration
°	*h.*	′	″	*h.*	′	″	
84,3	12	1	22,5	12	1	31	1,375
85,3	12	13	4,5	12	13	14	1,225
85,7	12	24	44,5	12	24	54,5	1,125
86,8	12	36	26	12	36	36	1,025
88	12	48	4,5	12	48	16,5	0,975

Hygro. Begin 34¼ *dry.* End 41 *dry.* Barom. Begin 30,093 End 30,078

87	2	15	48	2	15	56,5	1,4
87,7	2	27	24	2	27	33	1,3
89	2	38	58	2	39	8,5	1,2
90	2	50	32,5	2	50	43	1,1
90	3	2	6	3	2	18,5	1,025

Hygro. Begin 42¼ *dry.* End 39¾ *dry.* Barom. Begin 30,068 End 30,078

87,8	4	15	12	4	15	19	1,475
87,2	4	26	41	4	26	52	1,375
86,2	4	38	16,75	4	38	28	1,3
85,7	4	49	50,25	4	50	4	1,2
85,2	5	1	28	5	1	41	1,1

12th March. A. M.

Hygro. Begin 14 *moist.* End 14¼ *moist.* Barom. Begin 30,091 End 30,113

81	7	35	4	7	35	14,5	1,3
81,2	7	46	44,5	7	46	56	1,2
81,4	7	58	27	7	58	41	1,12
81,7	8	10	12	8	10	27	1,025
81,8	8	21	54,5	8	22	13	0,98

Hygro. Begin 14 *moist.* End 11 *moist.* Barom. Begin 30,108 End 30,108

81,8	9	36	6,25	9	36	16	1,4
81,8	9	47	46	9	47	58,5	1,3
81,8	9	59	28	9	59	42	1,2
81,8	10	11	10	10	11	26	1,1
81,8	10	22	56	10	23	12,5	1,025

12th March A. M.

Hygro. Begin 6¼ dry. Barom. Begin 30,118 Inches.
End 1½ dry. End 30,093

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
84,4	11 33 20	11 33 30	1,45
83,2	11 44 57	11 45 9	1,325
82,3	11 56 34,5	11 56 48,5	1,25
81,8	12 8 16	12 8 29	1,175
81,8	12 20 56,25	12 20 11	1,1

Hygro. Begin 00 Barom. Begin 30,093
End 1 dry. End 30,083

82,5	12 33 40	12 33 58,5	1,375
83,8	12 45 28	12 45 38,5	1,275
84	12 57 6,25	12 57 19	1,175
83,4	1 8 44,5	1 9 00,5	1,075
83,2	1 20 26	1 20 42,5	1

Hygro. Begin 7¼ dry. Barom. Begin 30,053
End 8¾ dry. End 30,043

86	3 35 38,5	3 35 49	1,4
85,8	3 47 12	3 47 23	1,3
86,2	3 58 46	3 59 1	1,2
86,2	4 10 30,5	4 10 28	1,125
86,2	4 21 58	4 22 15	1,05

Hygro. Begin 8 dry. Barom. Begin 30,046
End 8¾ dry. End 30,055

86	4 27 21	4 27 30	1,475
86	4 38 54	4 39 7	1,375
86	4 50 28	4 50 41	1,275
85	5 2 4	5 2 16,5	1,2
84,2	5 13 42	5 13 57	1,1

13th March A. M.

Hygro. Begin 23¾ moist. Barom. Begin 30,075
End 24¾ moist. End 30,088

79,2	6 33 25	6 33 39	1,45
79,5	6 45 3	6 45 20	1,325
79,6	6 56 47	6 57 1	1,225
79,8	7 8 30,5	7 8 44,5	1,15
79,8	7 20 13	7 20 27,5	1,075

13th March A. M.

Hygro. Begin 23¼ moist. Barom. Begin 30,127 Inches.
End 21¼ moist. End 30,125

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
81,2	8 49 54	8 50 3	1,45
81,4	9 1 33	9 1 44,5	1,325
81,7	9 13 14,5	9 13 25	1,225
81,8	9 24 56,25	9 25 8	1,125
82,2	9 36 38	9 36 54,5	1,075

Hygro. Begin 12¼ moist. Barom. Begin 30,123
End 3¼ dry. End 30,121

85	10 53 44	10 53 53,5	1,425
85,4	11 5 20	11 5 29	1,325
86,8	11 16 56	11 17 6,5	1,225
88,2	11 28 32,25	11 28 42,5	1,125
89,4	11 40 6,5	11 40 17	1,05

Hygro. Begin 31¼ dry. Barom. Begin 30,101
End 42½ dry. End 30,101

93,3	12 53 38	12 53 46	1,45
94	1 5 00,5	1 5 9,5	1,35
94,6	1 16 24,25	1 16 34	1,25
95,2	1 27 46,25	1 27 57	1,15
95	1 39 8,5	1 39 20	1,075

Hygro. Begin 46¾ dry. Barom. Begin 30,078
End 49 dry. End 30,078

94,5	2 48 38	2 48 48,5	1,45
94,3	2 59 58	3 00 9	1,35
94,2	3 11 20,25	3 11 31	1,275
94,4	3 22 42,5	3 22 56,5	1,175
94,8	3 34 6,5	3 34 21	1,1

14th March A. M.

Hygro. Begin 5¼ moist. Barom. Begin 30,088
End 7¼ moist. End 30,098

82	7 21 00	7 21 10	1,4
81,8	7 32 39	7 32 52	1,3
81,8	7 44 22	7 44 34	1,2
82	7 56 6,25	7 56 17	1,1
82	8 7 48,5	8 8 1	1,025

14th March A. M.

Hygro. Begin 7 moist. End 6 moist. Barom. Begin 30,108 End 30,127 Inches.

Temperature.	Disc. Hid.			Disc. Reappeared.			Arc of Vibration
°	h.	'	"	h.	'	"	
81,8	8	27	26,25	8	27	36	1,425
82,3	8	39	5	8	39	16,5	1,325
82,5	8	50	48	8	50	59	1,225
82,4	9	2	30	9	2	44,5	1,15
82,4	9	14	14,25	9	14	27	1,05

Hygro. Begin 14¾ dry. End 30¼ dry. Barom. Begin 30,128 End 30,108

90,9	11	30	36	11	30	45	1,275
92,3	11	42	8,25	11	42	17	1,175
93,6	11	53	38	11	53	48,5	1,075
92,2	12	5	8	12	5	20,5	1,00
89,7	12	16	39	12	16	54,5	0,925

Hygro. Begin 30¼ dry. End 37¾ dry. Barom. Begin 30,098 End 30,088

91,3	12	30	00	12	30	9	1,325
93,3	12	41	29	12	41	34	1,225
94,8	12	52	56,5	12	53	1,75	1,125
95,7	1	4	23	1	4	28	1,05
95,8	1	15	48,5	1	15	54,75	0,975

Hygro. Begin 47 dry. End 48 dry. Barom. Begin 30,053 End 30,048

94,8	4	1	58	4	2	7	1,4
94,3	4	13	21,5	4	13	31	1,3
94	4	24	45	4	24	57	1,2
93,9	4	36	12	4	36	25	1,125
93,3	4	47	36,5	4	47	53	1,075

16th March A. M.

Hygro. Begin 34¾ dry. End 34¾ dry. Barom. Begin 30,146 End 30,149

77,6	8	16	8	8	16	17	1,4
78	8	27	54	8	28	4	1,3
78	8	39	42	8	39	54,75	1,2
78	8	51	30,5	8	51	44,75	1,125
78,2	9	3	22	9	3	35,5	1,025

16th March A. M.

Hygro. Begin 30½ moist. End 20¾ moist. Barom. Begin 30,169 End 30,156 Inches.

Temperature.	Disc. Hid.			Disc. Reappeared.			Arc of Vibration
°	h.	'	"	h.	'	"	
80,8	10	39	2,25	10	39	21	1,4
81,7	10	50	54,5	10	51	5	1,3
82	11	2	37	11	2	49	1,2
82,8	11	14	24	11	14	33,5	1,1
83,8	11	26	8	11	26	18,5	1,02

Hygro. Begin 00¾ moist. End 3¾ moist. Barom. Begin 30,138 End 30,119

84,7	12	37	15	12	37	23	1,375
85	12	48	55,25	12	49	4,75	1,25
85,4	1	00	36,5	1	00	47	1,15
85,4	1	12	18	1	12	30,75	1,06
86	1	24	00	1	24	10,5	1

Hygro. Begin 29 dry. End 31 dry. Barom. Begin 30,086 End 30,088

90	3	30	52	3	31	2,5	1,4
90	3	42	21	3	42	32,5	1,3
89,9	3	53	51	3	54	4,5	1,2
90	4	5	22	4	5	37	1,12
90,2	4	16	53	4	17	9	1,05

18th March A. M.

Hygro. Begin 1 dry. End 00½ moist. Barom. Begin 30,063 End 30,071

81,8	7	54	48	7	54	57	1,375
82,6	8	6	31	8	6	42	1,275
83,0	8	18	16,5	8	18	27,5	1,175
83,2	8	30	00,25	8	30	11,75	1,075
83,6	8	41	46	8	42	00	1

Hygro. Begin 1½ dry. End 5 dry. Barom. Begin 30,078 End 30,071

83,4	10	18	2,5	10	18	12,5	1,375
83,5	10	29	44,5	10	29	54,75	1,275
84	10	41	26,25	10	41	37,75	1,175
85,5	10	53	9,75	10	53	21,5	1,075
87,4	11	4	52,5	11	5	4,5	1

18th March A. M.

Hygro. Begin 28¼ dry. End 38¼ dry. Barom. Begin 30,071 End 30,063 Inches.

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
94,8	12 9 36,5	12 9 44	1,45
95,6	12 21 00	12 21 7	1,35
96	12 32 24,5	12 32 33	1,25
96,8	12 43 49,5	12 43 57	1,15
97,3	12 55 14	12 55 22,75	1,075

Hygro. Begin 48¼ dry. End 49¼ dry. Barom. Begin 30,018 End 30,008

93,5	3 1 46	3 1 52,5	1,6
93,8	3 13 6	3 13 13,5	1,5
92,8	3 24 28	3 24 37	1,375
92,4	3 35 53	3 36 2,5	1,3
91,8	3 47 18,5	3 47 29	1,2

Hygro. Begin 49¼ dry. End 49 dry. Barom. Begin 30,008 End 29,988

91,8	3 50 55	3 51 3	1,425
91,0	4 2 19,5	4 2 29	1,325
92,6	4 13 45	4 13 56	1,225
92,2	4 25 14	4 25 25	1,175
92,3	4 36 46	4 36 57	1,1

19th March A. M.

Hygro. Begin 7¾ moist. End 10¾ moist. Barom. Begin 30,018 End 30,083

78,8	6 29 37	6 29 47	1,4
79,2	6 41 22	6 41 34	1,325
79,4	6 53 8,5	6 53 21	1,225
80	7 4 56	7 5 10	1,15
80	7 16 45	7 17 00	1,075

Hygro. Begin 15½ moist. End 18¾ moist. Barom. Begin 30,068 End 30,070

80,3	8 42 14,5	8 42 24,5	1,4
80,8	8 53 58	8 54 8	1,3
81	9 5 44	9 5 55	1,2
81,2	9 17 30	9 17 44,5	1,1
81,5	9 29 18	9 29 34	1

19th March A. M.

Hygro. Begin 15½ moist End 8¼ moist Barom. Begin 30,070 End 30,073 Inches.

Temperature.	Disc. Hid. h. ' "	Disc. Reappeared. h. ' "	Arc of Vibration
°			
83	10 29 12	10 29 21	1,4
83,4	10 40 54	10 41 4,5	1,3
84,7	10 52 37	10 52 47	1,2
85,3	10 4 18,5	11 4 28	1,1
86,8	10 16 00	11 16 11	1,025

Hygro. Begin 16¼ dry. End 30 dry. Barom. Begin 30,053 End 30,033

91,3	12 32 20	12 32 27	1,4
92,2	12 43 48,5	12 43 57	1,3
92,5	12 55 18	12 55 27	1,2
93	1 6 48	1 6 57	1,1
93,8	1 18 17	1 18 18,75	1,05

Hygro. Begin 39¼ dry. End 43¼ dry. Barom. Begin 30,008 End 29,998

95,3	2 40 40	2 40 49	1,375
94,3	2 52 4,5	2 52 15	1,275
95,3	3 3 38,75	3 3 40,5	1,175
95,5	3 14 53,5	3 15 6,5	1,1
94,8	3 26 20	3 26 33	1

20th March A. M.

Hygro. Begin 19¼ moist. End 21¼ moist. Barom. Begin 30,068 End 30,083

79,7	7 35 26,75	7 35 38	1,5
80	7 47 8	7 47 21,5	1,4
80	7 58 53,5	7 59 8	1,275
80,2	8 10 40	8 10 55,5	1,175
80,2	8 22 25	8 22 43,5	1,1

Hygro. Begin 16 moist. End 7 moist. Barom. Begin 30,062 End 30,078

82	10 25 6	10 25 18	1,45
82,6	10 36 48	10 36 59	1,35
83,2	10 48 31,5	10 48 43	1,225
83,8	11 00 14	11 00 26	1,15
84,7	11 11 56	11 12 9	1,05

20th March A. M.

Hygro. Begin 5¼ dry. End 5 dry. Barom. Begin 30,078 End 30,058 Inches.

Temperature.	Disc. Hid. h. ′ ″	Disc. Reappeared. h. ′ ″	Arc of Vibration
°	h. ′ ″	h. ′ ″	
85,5	12 14 30,5	12 14 38	1,5
85,4	12 26 5	12 26 14	1,4
84,8	12 37 42	12 37 53	1,3
83,7	12 49 22	12 49 35	1,2
83,2	1 1 4	1 1 19	1,1

20th March A. M.

Hygro. Begin 5 dry. End 11¼ dry. Barom. Begin 30,018 End 30,018 Inches.

Temperature.	Disc. Hid. h. ′ ″	Disc. Reappeared. h. ′ ″	Arc of Vibration
°	h. ′ ″	h. ′ ″	
84	2 28 7	2 28 17	1,4
84,8	2 39 46	2 39 57	1,3
84,3	2 51 28	2 51 39	1,2
86	3 3 9	3 3 20,5	1,125
85,2	3 14 48	3 15 1,5	1,075

Hygro. Begin 20¼ dry. End 22¼ dry. Barom. Begin 30,013 End 30,018

85,4	4 14 42	4 14 53	1,4
84,8	4 26 20,5	4 26 31	1,3
84	4 37 59	4 38 10	1,2
83	4 49 40	4 49 53	1,125
82,4	5 1 22	5 1 37	1,075

Observations for the Latitude.

1823 Month.		Names.	Double Meridian Altitude. ° ′ ″	Error of Sextant. ′ ″	Height of the Therm. °	Height of the Barom. Inches.	Remarks.
Jan.	10	α Columbæ.....	111 37 30	—0· 40	84	30,00	
	11	Sun's U. L.....	136 38 15	0· 40,6	87	30,10	
	20	Capella.....	88 30 00	0· 50	80	30,11	
	21	Sun's U. L:....	140 21 50	0· 30	87	30,10	
	22	Aldebaran.....	147 48 00	0· 30	84	30,11	
		Sirius.....	147 00 30	0· 30	84	30,10	
	23	Sun's U. L.....	141 16 15	0 30	88,8	30,11	
	24	Sun's U. L.....	141 42 45	0· 30	86	30,11	
	25	Capella.....	88 30 00	0· 30	81,5	30,10	
		Sirius.....	146 59 30	0· 30	81,5	30,10	
	27	Suns L. L.....	142 6 15	0· 15	85,7	30,01	
		Canopus.....	74 48 00	0· 15	85,7	30,01	
		Sirius.....	147 00 00	0· 15	85,7	30,00	
	28	Sun's U. L.....	143 42 00	0· 15	85,2	30,10	
	29	Sun's U. L.....	144 14 30	0· 15	84,5	30,11	
	30	Sun's U. L.....	144 45 45	0· 37,5	91	30,11	
	31	Sun's L L.....	144 14 20	0· 37,5	87,4	30,10	

1823 Month.	Names.	Double Meridian Altitude.	Error of Sextant.	Height of the Therm.	Height of the Barom.	Remarks.
		° ′ ″	′ ″	°	*Inches.*	
Feb. 2	Sun's U. L.....	146 25 20	—0 15	87,8	30,01	
5	Sun's L. L.....	147 6 50	0 35,6	85	30,11	
6	Canopus.....	74 48 45	0 35,6	77	30,00	
	ε Canis Maj.....	122 31 15	0 35,6	77	30,01	
8	Sun's U. L....	150 2 45	0 25	85,4	30,00	
	Aldebaran.	147 47 50	0 25	81,8	30,11	
	Capella	88 29 00	+0 39,06	81,8	30,10	
	Canopus.....	74 46 30	0 39,06	81,8	30,11	
	ε Canis Maj.....	122 29 30	0 39,06	81,8	30,10	
	δ Canis Maj.....	127 43 40	0 39,06	81,8	30,11	
	η Canis Maj.....	122 2 20	0 39,06	81,8	30,10	
	Castor.....	115 32 40	0 39,06	81,8	30,11	
	Pollux	123 12 00	0 39,06	81,8	30,11	
9	Sun's U. L....	150 40 00	—0 25	85,4	30,10	
	Capella	88 28 45	+0 39,06	82, 6	30,10	
	Pollux.....	123 10 40	0 39,06	82,6	30,10	
10	Canopus.....	74 47 15	0 20,6	84,3	30,11	
11	Capella	88 28 00	0 30,8	84,2	30,10	
	Canopus	74 46 35	0 30,8	84,2	30,10	
	ε Canis Maj.....	122 28 30	0 30,8	84,2	30,10	
12	Capella..... ..	88 28 40	0 26,67	86,2	30,11	
	β Tauri.....	123 10 20	0 26,67	86,2	30,10	
	Canopus.....	74 46 55	0 26,67	86,2	30,11	
14	Canopus.....	74 47 5	0 26,67	84,3	30,00	
	Castor.....	115 31 50	0 25	84,3	30,01	
	Pollux	123 11 55	0 25	84,3	30,01	
20	Canopus..... ..	74 45 40	0 25	82	30,00	
23	β Tauri.....	123 10 25	0 25	78,2	30,01	
Mar. 13	Castor	115 33 40	0 2,5	82	29,91	
	Pollux	123 11 15	0 2,5	82	29,91	

For the TIME, LONGITUDE *and* RATES *of* CHRONOMETERS.

1822 Month.	Double Altitude of the Sun.	Times by Chronometer *Earnshaw.*	Error of Sextant.
	° ′	*h.* ′ ″	′ ″
Dec. 22	120 00 U. L....	22 5 00	1 5
	120 00 L. L....	7 46	
	122 00 U. L....	9 56	
	122 00 L. L....	12 43	
23	87 00 U. L....	20 36 16	0 36,67
	87 00 L. L....	38 51	
	89 00 U. L....	41 2	
	89 00 L. L....	43 40	

1822 Month.	Double Altitude of the Sun.	Times by Chronometer *Earnshaw*.	Error of Sextant.	Remarks.
	° ′	h. ′ ″	′ ″	
Dec. 24	67 00 U. L....	19 50 26	0 36,67	
	67 00 L. L....	52 53		
	69 00 U. L....	54 59		
	69 00 L. L....	57 28		
	71 00 U. L....	59 34		
	71 00 L. L....	20 2 3		
25	83 00 U. L....	20 28 6	0 45	
	83 00 L. L....	30 40		
	85 00 U. L....	32 50		
	85 00 L. L....	35 24		
	87 00 U. L....	37 36		
	87 00 L. L....	40 11		
26	89 00 U. L....	20 43 1	2 16,5	
	89 00 L. L....	45 38		
	91 00 U. L....	47 49		
	91 00 L. L....	50 28		
28	81 00 U. L....	20 26 11	0 45	
	81 00 L. L....	28 44		
	83 00 U. L....	30 51		
	83 00 L. L....	33 26		
	97 00 L. L....	1 46 16	0 45	
	97 00 U. L....	48 59		
	95 00 L. L....	51 17		
	95 00 U L....	53 17		
30	89 00 U. L....	20 45 39	0 45	
	89 00 L. L....	48 16		
	91 00 U. L....	50 28		
	91 00 L. L....	53 56		
31	83 00 U. L....	20 31 59	0 45	
	83 00 L. L....	34 35		
	85 00 U. L....	36 44		
	85 00 L. L....	39 19		
	87 00 U. L....	41 25		
	87 00 L. L....	44 4		
1823 Jan. 1	94 00 U. L....	20 58 44	0 45	
	94 00 L L....	21 1 29		
	96 00 U. L....	3 40		
	96 00 L. L....	6 26		
2	91 00 U. L....	20 51 59	0 45	
	91 00 L. L....	54 40		
	93 00 U. L....	56 51		
	93 00 L. L....	59 33		

1823. Month.	Double Altitudes of the Sun.	Times by Chronometer *Earnshaw*.	Error of Sextant.	Remarks.
	° ′	*h.* ′ ″	′ ″	
Jan. 3	90 00 U.L....	20 50 12	0 40	
	90 00 L.L....	52 50		
	92 00 U.L....	54 58		
	92 00 L.L....	57 39		
4	82 57 00 U.L.	20 34 4	0 40	
	83 59 30 U.L.	36 27		
	84 52 30 U.L.	38 37		
5	82 42 30 U.L.	20 34 3	0 40	
	83 42 5 U.L.	36 21		
	84 27 30 U.L.	38 10		
	85 6 15 U.L.	39 30		
8	82 41 45 U.L.	20 35 24	0 40	
	83 20 30 U.L.	36 49		
26	85 36 45 U L.	20 47 8	0 15	
	86 26 30 U.L.	49 1		
	87 13 00 U.L.	50 42		
27	94 35 20 U.L.	21 7 22	0 15	
	95 25 00 U.L.	9 16		
	96 3 00 U.L.	10 42		
28	122 1 30 U.L.	22 12 45	0 15	
	122 43 30 U.L.	14 38		
	123 16 00 U.L.	16 19		

1823 Month.	Double Altitudes of the Sun.		Times by *Clock*.	Comparison of the Chronometers.	Remarks.
			h. ′ ″	*h.* ′ ″	
Feb. 19	116 00 U.L.	Forenoon.	10 12 54,5	*Clock.* 12 18 00	
	116 00 L.L.		15 14	*Earn.* 11 56 44	
	118 00 U.L.		17 16	00 21 16	
	118 00 L.L.		19 35,5		
	120 00 U.L.		21 35,5		
	120 00 L.L.		23 57,5		
	122 00 U.L.		25 57		
	122 00 L.L.		28 18		
	116 00 L.L.	Afternoon.	2 15 44	*Clock.* 12 19 00	
	116 00 U.L.		13 15	No. 391. 9 54 5	
	118 00 L.L		11 15	2 24 55	
	118 00 U.L.		8 52,5		
	120 00 L.L.		6 51,5		
	120 00 U.L		4 32		
	122 00 L.L.		2 31,5		
	122 00 U.L.		00 9,5		

1823 Month.	Double Altitudes of the Sun.		Times by the *Clock*.	Comparison of the Chronometers with the *Clock*.	Remarks.
	° ′		*h.* ′ ″		
Feb. 20	117 00 U. L.	A. M.	10 14 27	*Clock.* 12 18 00	
	117 00 L. L.		16 47	*Earn.* 11 57 1	
	119 00 U. L.		18 46	00 20 59	
	119 00 L. L.		21 6		
	117 00 L. L.	P. M.	2 13 49,5	*Clock.* 12 19 00	
	117 00 U. L.		11 29,5	No. 391. 9 53 55,5	
	119 00 L. L.		9 30	2 25 4,5	
	119 00 U. L.		7 9		
March 1	120 00 U. L.	Forenoon.	10 13 54	*Clock.* 12 17 00	
	120 00 L. L.		16 4,75	*Earn.* 12 00 17,25	
	122 00 U. L.		18 1,5	00 16 42,75	
	122 00 L. L.		20 15,75		
	124 00 U. L.		22 12,25		
	124 00 L. L.		24 28		
	120 00 L. L.	Afternoon.	2 8 24,75	*Clock.* 12 18 00	
	120 00 U. L.		6 10	No. 391. 9 52 53	
	122 00 L. L.		4 14,75	2 25 7	
	122 00 U. L.		2 00		
	124 00 L. L.		00 5,25		
	124 00 U. L.		1 57 48,25		
3	120 00 U. L.	Forenoon.	10 12 47	*Clock.* 12 17 00	
	120 00 L. L.		14 59,25	*Earn.* 12 00 59	
	122 00 U. L.		16 53,5	00 16 1	
	122 00 L. L.		19 17,5		
	124 00 U. L.		21 2,5		
	124 00 L. L.		23 17,5		
	120 00 L. L.	Afternoon.	2 8 39	*Clock.* 12 18 00	
	120 00 U. L.		6 27	No. 391. 9 52 30	
	122 00 L. L		4 31,75	2 25 30	
	122 00 U. L.		2 19		
	124 00 L L.		00 22,5		
	124 00 U. L		1 58 12,75		

1823 Month.	Double Altitudes of the Sun.	Times by the *Clock*.	Error of Sextant.	Comparison of the Chronometers with the *Clock*.	Remarks.
	° ′	*h.* ′ ″	′ ″	*h.* ′ ″	
March 8	128 00 U. L....	22 25 23	+0 25,6	*Clock.* 12 16 00 *Earn.* 12 18 9,75 00 2 9,75	
	128 00 L. L....	27 34		*Clock.* 12 17 00 No. 391. 8 7 26,5 4 9 33,5	
9	123 00 U. L....	22 14 42,5	0 25,6	*Clock.* 12 18 00 *Earn.* 12 20 26 00 2 26	
	123 00 L. L....	16 52			
	125 00 U. L....	18 45,5			
	125 00 L. L....	20 57		*Clock.* 12 19 00 No. 391. 8 9 8,25 4 9 52,25	
	127 00 U. L....	22 49			
	127 00 L. L....	25 00			

53325

1823 Month.	Double Altitude of the Sun.	Times by the *Clock*.	Error of Sextant.	Comparison of the Chronometers with the *Clock*.	Remarks.
	° ′	*h.* ′ ″	′ ″	*h.* ′ ″	
Mar. 10	125 00 U. L....	22 17 49	+ 0 25,6	*Clock.* 12 24 00	
	125 00 L. L....	20 2		*Earn.* 12 27 6,25	
	127 00 U. L....	21 54,5		00 3 6,25	
	127 00 L. L....	24 4,5		*Clock.* 12 25 00	
				No. 391. 8 15 20	
				4 9 40	
11	123 00 U. L....	22 13 18	0 2,5		
	123 00 L. L....	15 31		*Clock.* 12 11 00	
	125 00 U. L....	17 22		*Earn.* 12 14 21,25	
	125 00 L. L....	19 32,5		00 3 21,25	
	127 00 U. L....	21 25		*Clock.* 12 12 00	
	127 00 L. L....	23 35,75		No. 391. 8 2 11	
				4 9 49	
12	123 00 U. L....	22 12 52	2 2,5	*Clock.* 12 6 00	
	123 00 L. L....	15 00,5		*Earn.* 12 9 39	
	125 00 U. L....	16 55		00 3 39	
	125 00 L. L....	19 6		*Clock.* 12 7 00	
	127 00 U. L....	20 57,25		No. 391. 8 56 55	
	127 00 L. L....	23 8		4 10 5	
13	123 00 U. L....	22 12 25	0 2,5	*Clock.* 12 22 00	
	123 00 L. L....	14 37		*Earn.* 12 25 55,75	
	125 00 U. L....	16 29,5		00 3 55,75	
	125 00 L. L....	18 37,25		*Clock.* 12 23 00	
	127 00 U. L....	20 30,5		No. 391. 8 12 43	
	127 00 L. L....	22 39		4 10 17	
15	109 00 L. L....	2 27 20,5	0 2,5	*Clock.* 12 1 00	
	109 00 U. L....	29 30		*Earn.* 12 5 19	
	107 00 L. L....	31 25		00 4 19	
	107 00 U. L....	33 32,5		*Clock.* 12 2 00	
	105 00 L. L....	35 22		No. 391. 7 51 31,5	
	105 00 U. L....	37 33,75		4 10 28,5	
15	124 00 U. L....	22 13 38,5	0 2,5	*Clock.* 12 24 00	
	124 00 L. L....	15 47		*Earn.* 12 28 40,5	
	126 00 U. L....	17 38		00 4 40,5	
	126 00 L. L....	19 47,5		*Clock.* 12 25 00	
	128 00 U. L....	21 39,5		No. 391. 8 14 21	
	128 00 L. L....	23 48		4 10 39	
				Clock. 12 1 00	
				Earn. 12 6 26,25	
16	128 00 U. L....	22 20 55	0 2,5	00 5 26,25	
	128 00 L L....	23 1,5			
				Clock. 12 2 00	
				No. 391. 7 51 32,75	
				4 10 27,25	

23882

1822 Month.	Double Altitude of the Sun.	Times by the *Clock*.	Error of Sextant.	Comparison of the Chronometers with the *Clock*.	Remarks.
	° ′	*h.* ′ ″	′ ″	*h.* ′ ″	
Mar. 17	98 00 L. L....	2 48 20	+0 2,5	*Clock.* 12 1 00	
	98 00 U.L....	50 30		*Earn.* 12 6 43	
	96 00 L. L....	52 20		00 5 43	
	96 00 U. L....	54 29		*Clock.* 12 2 00	
	94 00 L. L....	56 19,5		No. 391. 7 51 21	
	94 00 U. L....	58 29		4 10 39	
				Clock. 12 13 00	
18	125 00 U. L....	22 14 6,75	0 2,5	*Earn.* 12 19 2,25	
	125 00 L. L....	16 14,5		00 6 2,25	
	127 00 U. L....	18 8		*Clock.* 12 14 00	
	127 00 L. L....	20 17,25		No. 391. 8 3 8,25	
				4 10 51,75	
20	114 00 L. L....	2 15 45,5	0 2,5	*Clock.* 12 2 00	
	114 00 U. L....	17 54,75		*Earn.* 12 8 24,5	
	112 00 L. L....	19 45		00 6 24,5	
	112 00 U. L....	21 54		*Clock.* 12 3 00	
	110 00 L. L....	23 45,5		No. 391. 7 51 57,25	
	110 00 U. L....	25 54,75		4 11 2,75	
		Clock taken down.			
		Earnshaw.		*Earn.* 12 5 00	
21	91 00 L. L....	3 8 14	0 2,5	No. 391. 7 47 2	
	91 00 U. L....	10 24		4 17 58	
	89 00 L. L....	12 14			
	89 00 U. L....	14 22			
22	89 00 L. L....	3 12 10,5		*Earn.* 12 9 00	
	88 00 L. L....	14 11		No. 391. 7 50 51	
	87 00 L. L....	16 9,5		4 18 29	

For the VARIATION *of the* COMPASS *by Amplitudes, Azimuths and True Bearings of the Sun.*

1st.

1822 Month.	Times by Chronometer *Earnshaw*.	Magnetic Bearings of the Sun, by the Azimuth Compass.	Remarks.
	h. ′ ″	°	
December 25	5 26	S. 64¼ W. L. L.....	Sun set.
26	5 28	S. 64¼ W. L. L.....	Sun set.
27	5 26	S. 65 W. Centre.....	Sun set.
29	5 30	S. 65 5 W. Centre.....	Sun set.
31	5 30 30	S. 64¼ W. Centre.....	Sun set.
1823 January 1	5 31	S. 65 25 W. Centre.....	Sun set.
2	5 31	S. 64 55 W. Centre.....	Sun set.
3	5 33	S. 65 15 W. Centre.....	Sun set.

2d.

1823 Month.	Times by Chronometer *Earnshaw*.	Sun's Altitude.	Error of Sextant.	Magnetic Bearings of the Sun by the Compass.	Remarks.
	h. ′ ″	° ′ ″	′ ″	°	
Jan. 3	5 25 37	1 7 35 L. L.	0 45	S. 65¼ W. Centre....	Height of the Eye.
4	4 46 24	10 13 30 L. L.	0 40	S. 65¼ W. Centre....	F. 5.
5	5 6 5	5 56 00 Centre	0 40	S. 65¼ W. Centre....	

3d.

1823 Month.	Times by Chronometer *Earnshaw*.	Distance of the Sun's near Limb and Toolitchemaun Peak.	Error of Sextant.	Magnetic Bearings of the Peak by the Compass.	Remarks.
	h. ′ ″	° ′ ″	—	° ″	
Jan. 9	17 41 37	54 27 30	′ ″		Peak marked *(a)*
	42 54	19 45	0 40	N. 55 45 E.	in the Sketch.
	44 35	16 35			
20	17 45 15	52 17 00	0 30	N. 55 45 E.	

Rise and Fall of the Tide at the Full and Change of the Moon, At Pulo Gaunsah Lout, in February 1823.

Hour of the Day.	Last Quarter Feb. 3, at 5¼ A. M.	New Moon, Feb. 11, at 9¾ A. M.	First Quarter, Feb. 18, at 5½ P. M.	Full Moon, Feb. 25, at 11¾ A. M.
h.	F. In.	F. In.	F. In.	F. In.
6 A. M.	1 9	4 8	2 10	5 6
7	3 0	5 0	3 10	5 9
8	3 4½	4 6	4 3	4 0
9	4 1½	3 9	5 0	3 6
10	5 0	3 2	6 0	2 6
11	4 9	2 6	7 0	2 0
12	4 3	2 0	5 0	2 3
1 P. M.	4 0	2 4	4 6	2 6
2	3 10	3 3	3 6	3 3
3	3 3	4 6	3 0	4 0
4	2 10	4 8	2 6	6 3
5	2 9	6 4	2 8	6 9
6	2 11	6 9	2 10	8 3

ECLIPSEs of the SATELLITES of JUPITER.

Month.		Place of Observation.	Observer.	Satellite.	Immersion or Emersion.	Times by Chronometer.				Remarks.
						h.	′	″		
1822										
September	8	Tappanooly.	C. & L.	1	Imm.	13	47	33	397	Planet clear and sufficiently high —Observation good.
November	9	Pulo Parjong.	L.	1	Imm.	11	27	45	391	Planet high--Observation not satisfactory, from the Satellite disappearing very near the Body of Jupiter.
	18	,,	L.	1	Imm.	8	44	56	397	Planet high—Atmosphere clear—Observation tolerably good.
December	20	Pulo Pinnee.	R.	1	Em.	8	2	32	*Earn.*	Planet at a convenient Altitude—Moon Light—Atmosphere clear—Observation good.
1823										
January	3	Pulo Gaunsah Lout.	L.	1	Em.	11	55	30	,,	Planet clear—Eclipse observed with ease—Observation good.
	9	,,	L.	2	Em.	7	36	27	,,	Planet high—Atmosphere clear—Observation good.
		,,	R.	,,	,,	7	36	30	,,	
	28	,,	L.	1	Em.	6	46	58	,,	Planet high—but the Telescope unsteady owing to wind.—Observation otherwise good.
		,,	R.	,,	,,	6	47	10	,,	
February	17	,,	L.	2	Em.	10	08	30	,,	Planet clear—Observation good.
	20	,,	L.	1	Em.	7	10	25	,,	Planet at a convenient Altitude—Atmosphere clear—Observation good.
		,,	R.	,,	,,	7	10	30	,,	
March	3	,,	L.	3	Em.	6	23	35	,,	Planet at a convenient Altitude—Atmosphere covered with a thin haze—Observation otherwise good.
		,,	R.	,,	,,	6	24	21	,,	
	10	,,	R.	3	Imm.	8	16	50	,,	Planet low but clear—Observation good.
		,,	L.	,,	,,	8	16	53	,,	
	14	,,	L.	2	Em.	7	38	10	,,	Planet at a convenient Altitude—Atmosphere somewhat hazy—Observation good.

N. B.—The Eclipses by *Lawrence* were Observed with a 4½ feet Achromatic Telescope by Dolland—Magnifying Power 70 ;—Those by *Robinson* with a 2½ feet Telescope—Magnifying Power about 40.

The foregoing are all the *Observations,* from which the CONCLUSIONS will be drawn; these I have endeavoured should be arranged in as clear a manner as possible; in order that any person, so disposed, may be enabled to examine the Foundation on which the Conclusions rest—and to go over the Calculations.

We now proceed to the Computation of the *Experiments* and *Observations.* The *Results only* of the different Operations, are contained in the Tables which follow; for the performance of these Operations *The Honorable* THE GOVERNOR *in Council* was pleased to allow me a continuance of the aid of the two Observers, *Robinson* and *Lawrence*—The Rules for reducing the Experiments having been furnished them step by step, as they proceeded---each calculating the Experiments and Observations himself had made—and the Results were not entered, until the Operations had been twice gone over, and then examined—the Details of the Calculations are of course not inserted, as these alone would occupy a very large Volume. The Calculations for finding the Specific Gravity of the Pendulum, for the Correction on account of the Buoyancy of the Atmosphere, for the Height of the Pendulum above the level of the Sea, for finding the Length of the Pendulum at the Equator, and for the Ellipticity, have also been gone over by *E. Lake, Esq.* of the *Madras Engineers* —who was so good to undertake this service; and as in nice and difficult Computations of this nature, the more Calculators there are independent of each other, the better, I was much obliged and I may add gratified, by his having done so.

I have commenced with the *Pendulum Experiments* as being the most important—the first Table shews the *Rate of the Clock* while those Experiments were making,—the same which is used in the Deductions. The Series of each Observer I have divided into four Sets—between the second and third Sets, the Apparatus was purposely put completely out of adjustment, and set right again—between the other Sets, the Apparatus was examined from time to time, and any trifling adjustment made that was required.

RATE OF THE CLOCK

used in the COMPUTATION of the

PENDULUM EXPERIMENTS.

1823 Month.	Times by the Clock. Forenoon.	Afternoon.	Mean.	Equation of Equal Altitudes.	Apparent Noon by the Clock.	Equation of Time.	Mean Noon by the Clock.	Clock *Slow or Fast* for Mean Time. Clock Slow.	Rate in 24 hours.
	h. ′ ″	h. ′ ″	h. ′ ″	″	h. ′ ″	′ ″	h. ′ ″	h. ′ ″	″
Feb. 14	9 42 12,0	2 46 56,25	12 14 34,13	2,50	12 14 31,63	14 32,87	11 59 58,76	0 00 01,24	
15	9 52 27,83	2 36 35,75	12 14 31,79	2,64	12 14 29,15	14 30,66	11 59 58,49	0 00 01,51	— 00,27
16	9 49 50,67	2 39 07,33	12 14 29	2,52	22 14 26,48	14 27,68	11 59 58,80	0 00 01,20	+ 00,31
18	9 36 11,37	2 52 28,75	12 14 20,06	2,29	12 14 17,77	14 19,49	11 59 58,28	0 00 01,72	— 00,26
19	9 40 39,08	2 47 49,75	12 14 14,42	2,41	12 14 12,00	14 14,36	11 59 57,64	0 00 02,36	00,64
20	9 35 16,88	2 52 58,68	12 14 07,78	2,27	12 14 05,51	14 08,43	11 59 57,08	0 00 02,92	00,56
21	9 39 09,99	2 47 00,33	12 13 05,00	2,17	12 13 02,83	14 01,87	11 59 00,96	0 00 59,04	*Clock wound up in the afternoon.*
22	9 33 27,69	2 52 28,25	12 12 57,97	2,06	12 12 55,91	13 54,56	11 59 01,35	0 00 58,65	+ 00,39
23	9 33 00,31	2 52 38,25	12 12 49,28	2,12	12 12 47,16	13 46,70	11 59 00,46	0 00 59,54	00,89
24	9 32 31,19	2 52 47,31	12 12 39,25	2,01	12 12 37,24	13 38,12	11 58 59,12	0 01 00,88	01,34
25	10 37 13,33	1 47 45,25	12 12 29,29	1,94	12 12 27,35	13 28,96	11 58 58,39	0 01 01,61	00,73
26	9 33 39,25	2 50 58,12	12 12 18,69	1,83	12 12 16,86	13 19,22	11 58 57,64	0 01 02,36	00,75
27	9 32 33,56	2 50 25,19	12 11 29,38	1,80	12 11 27,58	13 08,89	11 58 18,69	0 01 41,31	*Clock wound up in the afternoon.*
March 1	9 33 41,88	2 48 31,56	12 11 06,72	1,67	12 11 05,05	12 46,59	11 58 18,46	0 01 41,54	— 01,12
3	9 28 44,50	2 52 42,12	12 10 43,31	1,48	12 10 41,83	12 22,27	11 58 19,56	0 01 40,44	+ 00,55

1823	Times by the Clock.			Equation of Equal Altitudes.	Apparent Noon by the Clock.	Equation of Time.	Mean Noon by the Clock.	Clock *Slow or Fast* for Mean Time.	Rate in 24 hours.
Month.	Forenoon.	Afternoon.	Mean.					Clock Slow.	
	h. ′ ″	h. ′ ″	h. ′ ″	″	h. ′ ″	′ ″	h. ′ ″	h. ′ ″	″
March 4	9 31 21,79	2 49 38,43	12 10 30,11	1,42	12 10 28,69	12 09,38	11 58 19,31	0 01 40,69	— 00,25
8	9 26 04,31	2 51 57,94	12 09 01,13	1,13	12 09 00	11 13,62	11 57 46,38	0 02 13,62	*Clock wound up in the afternoon.*
9	9 25 40,69	2 51 52,44	12 08 46,57	0,97	12 08 45,6	10 58,65	11 57 46,95	0 02 13,05	+ 00,57
10	9 35 53,56	2 41 09,67	12 08 31.61	0,89	12 08 30,72	10 43,41	11 57 46,31	0 02 13,69	— 00,64
11	9 26 27,06	2 49 11,37	12 07 49,37	0,93	12 07 48,44	10 27,75	11 57 20,69	0 02 39,31	*Clock wound up in the afternoon.*
12	9 28 04,81	2 47 01,94	12 07 33,38	0,69	12 07 32,69	10 11,80	11 57 20,89	0 02 39,11	+ 00,20
13	9 23 40,56	2 50 53,87	12 07 17,21	0,66	12 07 16,55	09 55,51	11 57 21,04	0 02 38,96	00,15
14	9 23 17,93	2 50 43,87	12 07 00,90	0,55	12 07 00,35	09 38,97	11 57 21,38	0 02 38,62	00,34
16	9 51 07,75	2 21 44,69	12 06 26,22	0,42	12 06 25,8	09 05,02	11 57 19,78	0 02 39,22	— 00,30
17	9 23 51,23	2 47 42,30	12 05 46,76	0,41	12 05 46,35	08 47,69	11 56 58,66	0 03 01,34	*Clock wound up in the afternoon.*
18	9 54 29,95	2 16 25,28	12 05 28,11	0,41	12 05 27,7	08 30,14	11 56 57,56	0 03 02,44	— 01,10
19	9 19 08,62	2 51 09,63	12 05 09,08	0,32	12 05 08,76	08 12,32	11 56 56,44	0 03 03,56	01,12
20	9 18 48,75	2 50 52,69	12 04 50,72	0,31	12 04 50,41	07 54,35	11 56 56,06	0 03 03,94	00,38

For the LENGTH *of the* PENDULUM

First Set.

1823. 15*th February* A. M.

Rate of the Clock—0,27 Hygrometer 8 *moist* Barometer *Inches.* 30,225

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
81,5	10 08 26	1,290							
			1,245	695,5	693,5	86151,55	2,540	4,970	86159,060
	10 20 01,5	1,200							
			1,155	694,5	692,5	86151,19	2,186	5,182	86158,558
82,5	10 31 36	1,110							
			1,080	698,25	696,25	86152,52	1,911	5,393	86159,823
	10 43 14,25	1,050							
			1,015	696,00	694,0	86151,72	1,688	5,605	86159,013
83,5	10 54 50,25	0,980							
82,5						Mean			86159,114
						Rate of the Clock			— 0,27
						Vibrations in 24 hours			86158,844

Hygrometer 9 *dry.* Barometer 30,213

84	11 01 32	1,335							
			1,2975	691,25	689,25	86150,02	2,758	6,134	86158,912
	11 13 03,25	1,26							
			1,2175	689,75	687,75	86149,47	2,429	6,557	86158,456
86	11 24 33	1,175							
			1,1275	689,75	687,75	86149,47	2,083	7,032	86158,585
	11 36 02,75	1,080							
			1,045	687,25	685,25	86148,56	1,789	7,561	86157,910
88,5	11 47 30	1,010							
86,17						Mean			86158,466
						Rate of the Clock			— 0,27
						Vibrations in 24 hours			86158,196

Hygrometer 32 *dry.* Barometer 30,183

94	1 05 08,25	1,298							
			1,254	676,25	674,25	86144,47	2,577	10,205	86157,252
	1 16 24,5	1,210							
			1,170	677,5	675,5	86144,94	2,243	10,311	86157,494
94,5	1 27 42	1,130							
			1,095	679,0	677,0	86145,51	1,964	10,364	86157,838
	1 39 01	1,060							
			1,0175	678,5	676,5	86145,32	1,696	10,364	86157,380
94,5	1 50 19,5	0,975							
94,33						Mean			86157,491
						Rate of the Clock			— 0,27
						Vibrations in 24 hours			86157,221

Hygrometer 39,5 *dry.* Barometer 30,148

93	3 21 42,5	1,230							
			1,190	681,5	679,5	86146,44	2,320	9,465	86158,225
	3 33 04	1,150							
			1,115	682,5	680,5	86146,81	2,037	8,936	86157,783
90,5	3 44 26,5	1,080							
			1,0475	685,5	683,5	86147,92	1,798	8,460	86158,178
	3 55 52	1,015							
			0,9825	687,5	685,5	86148,65	1,582	8,037	86158,269
88,5	4 07 19,5	0,950							
90,67						Mean			86158,114
						Rate of the Clock			— 0,27
						Vibrations in 24 hours			86157,844

16*th February* A. M.

Rate of the Clock +0,31 — Hygrometer 2,5 *dry.* — Barometer *Inches.* 30,185

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc	Correction for Temperature.	Vibrations in 24 hours.
	h. ′. ″			″			+	+	
82,00	7 43 00	1,295							
			1,2575	695,5	693,5	86151,55	2,591	5,076	86159,217
	7 54 35,5	1,220							
			1,185	696,0	694,0	86151,72	2,301	5,076	86159,097
82,00	8 06 11,5	1,15							
			1,11	697,25	695,25	86152,17	2,019	5,129	86159,318
	8 17 48,75	1,07							
			1,0275	696,25	694,25	86151,81	1,730	5,235	86158,775
82,5	8 29 25	0,985							
82,17						Mean			86159,102
						Rate of the Clock			+ 0,31
						Vibrations in 24 hours			86159,412

Hygrometer 12,5 *dry.* — Barometer 30,208

84	10 33 16,25	1,225							
			1,1825	693,75	691,75	86150,92	2,291	6,028	86159,239
	10 44 50	1,140							
			1,105	693,0	691,0	86150,07	2,001	6,239	86158,210
85	10 56 23	1,070							
			1,030	693,25	691,25	86150,74	1,738	6,557	86159,035
	11 07 56,25	0,990							
			0,950	691,5	689,5	86150,11	1,479	6,980	86158,569
87	11 19 27,75	0,910							
85,33						Mean			86158,763
						Rate of the Clock			+ 0,31
						Vibrations in 24 hours			86159,073

Hygrometer 21,5 *dry.* — Barometer 30,208

87	11 24 49	1,270							
			1,2225	685,75	683,75	86148,01	2,449	7,561	86158,020
	11 36 14,75	1,175							
			1,135	684,75	682,75	86147,64	2,111	8,301	86158,052
90,5	11 47 39,5	1,095							
			1,060	681,50	679,50	86146,44	1,841	8,989	86157,270
	11 59 01	1,025							
			0,9825	682,5	680,5	86146,81	1,582	9,623	86158,015
93,5	12 10 23,5	0,940							
90,33						Mean			86157,839
						Rate of the Clock			+ 0,31
						Vibrations in 24 hours			86158,149

Hygrometer 43 *dry.* — Barometer 30,163

96	1 29 55,5	1,03							
			0,995	675	673	86144	1,623	10,892	86156,515
	1 41 10,5	0,96							
			0,9225	677,5	675,5	86144,94	1,394	11,315	86157,649
97	1 52 28	0,885							
			0,855	677,5	675,5	86144,94	1,198	11,474	86157,612
	2 03 45,5	0,825							
			0,790	678	676	86145,13	1,023	11,580	86157,733
97,5	2 15 03,5	0,755							
96,83						Mean			86157,377
						Rate of the Clock			+ 0,31
						Vibrations in 24 hours			86157,687

16th February.

Hygrometer 46 *dry.* — Barometer *Inches.* 30,134

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"		'	+	+	
94,5	3 36 24,5	1,200							
			1,1625	679,75	677,75	86145,79	2,214	9,941	86157,945
	3 47 44,25	1,125							
			1,0875	683,75	681,75	86147,28	1,938	9,115	86158,333
90,5	3 59 08	1,050							
			1,015	686,5	684,5	86148,29	1,688	8,513	86158,491
	4 10 34,5	0,98							
			0,9475	685,75	683,75	86148,01	1,471	8,196	86157,677
89	4 22 00,25	0,915							
91,33						Mean.....			86158,112
						Rate of the Clock.....			+ 0,31
						Vibrations in 24 hours...			86158,422

17th February A. M. "
Rate of the Clock.—0,26 — Hygrometer 3 *dry.* — Barometer 30,181

80,75	6 55 31,5	1,19							
			1,1525	700,00	698,0	86153,14	2,176	4,547	86159,863
	7 07 11,5	1,115							
			1,075	701,5	699,5	86153,67	1,893	4,547	86160,110
80,75	7 18 53	1,035							
			0,9975	701,5	699,5	86153,67	1,630	4,329	86159,629
	7 30 34,5	0,960							
			0,925	703,25	701,25	86154,28	1,402	4,468	86160,150
80,5	7 42 17,75	0,890							
						Mean.....			86159,938
						Rate of the Clock.....			— 0,26
						Vibrations in 24 hours..			86159,678

Hygrometer 7 *dry.* — Barometer 30,174

82,5	9 56 03,5	1,235							
			1,190	697,25	695,25	86152,17	2,320	5,340	86159,830
	10 07 40,75	1,145							
			1,1075	697,25	695,25	86152,17	2,010	5,446	86159,626
83	10 19 18	1,07							
			1,025	697,0	695,0	86152,08	1,721	5,552	86159,353
	10 30 55	0,98							
			0,9425	698	696	86152,44	1,455	5,658	86159,553
83,5	10 42 33	0,905							
83						Mean.....			86159,591
						Rate of the Clock.....			— 26
						Vibrations in 24 hours..			86159,331

Hygrometer 11,5 *dry.* — Barometer 30,173

83,5	10 52 16	1,185							
			1,140	695	693	86151,37	2,129	5,859	86159,385
84,25	11 03 51	1,095							
			1,0575	693,75	691,75	86150,92	1,832	6,250	86159,002
85,3	11 15 24,75	1,02							
			0,985	693,75	691,75	86150,92	1,590	6,620	86159,230
86	11 26 58,5	0,95							
			0,915	692	690,0	86150,29	1,405	6,980	86158,675
87	11 38 30,5	0,88							
85,21						Mean.....			86159,044
						Rate of the Clock.....			— 0,26
						Vibrations in 24 hours..			86158,784

17th February A. M.

Hygrometer 38,5 *dry* — Barometer 30,143 *Inches.*

Temperature.	Time of Coincidence. h.	'	"	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc. +	Correction for Temperature. +	Vibrations in 24 hours.
93,5	12	58	54	1,035		"					
					0,9975	679,75	677,75	86145,79	1,630	10,046	86157,466
94	1	10	13,75	0,960							
					0,925	680	678,0	86145,88	1,402	10,258	86157,540
94,5	1	21	33,75	0,890							
					0,855	678,25	676,25	86145,23	1,198	10,469	86156,897
95	1	32	52	0,82							
					0,7825	682,00	680,0	86146,63	1,003	10,364	86157,997
94	1	44	14	0,745							
94,20								Mean.....			86157,474
								Rate of the Clock.....			— 0,26
								Vibrations in 24 hours..			86157,214

Hygrometer 40 *dry.* — Barometer 30,103

86,5	3	22	25	1,090							
					1,055	692	690	86150,29	1,824	6,874	86158,988
86	3	33	57	1,020							
					0,985	690,75	688,75	86149,84	1,590	6,768	86158,198
86	3	45	27,75	0,95							
					0,9125	696	694	86151,72	1,364	6,662	86159.764
85,5	3	57	03,75	0,875							
					0,8425	695,25	693,25	86151,46	1,163	6,557	86159,180
85,5	4	08	39	0,81							
85,9								Mean.....			86159,033
								Rate of the Clock.....			— 0,26
								Vibrations in 24 hours..			86158,773

18th February A. M.
Rate of the Clock—0,26 — Hygrometer 8 *dry.* — Barometer 30,135

79,5	7	46	29,25	1,28							
					1,24	699,25	697,25	86152,88	2,519	4,124	86159,523
80	7	58	08,5	1,20							
					1,1625	700	698,00	86153,14	2,214	4,336	86159,690
80,5	8	09	48,5	1,125							
					1,0875	701,25	699,25	86153,58	1,937	4,442	86159,959
80,5	8	21	29,75	1,05							
					1,010	701,75	699,75	86153,76	1,671	4,494	86159,925
80,75	8	33	11,5	0,97							
80,25								Mean.....			86159,774
								Rate of the Clock.....			— 0,26
								Vibrations in 24 hours..			86159,514

Hygrometer 10 *dry.* — Barometer 30,153

82	9	48	03	1,360							
					1,32	697,5	695,5	86152,26	2,855	5,076	86160,191
82	9	59	40,5	1,280							
					1,235	696,25	694,25	86151,81	2,499	5,076	86159,385
82	10	11	16,75	1,19							
					1,1425	696,75	694,75	86151,99	2,139	5,182	86159,311
82,5	10	22	53,5	1,095							
					1,0575	699,0	697,0	86152,79	1,832	5,330	86159,952
82,7	10	34	32,5	1,020							
82,24								Mean.....			86159,710
								Rate of the Clock.....			— 0,26
								Vibrations in 24 hours..			86159,450

18*th February* A. M.

Hygrometer 30 *dry.* Barometer 30,154 *Inches.*

Temperature.	Time of Coincidence. h.	'	"	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc. +	Correction for Temperature. +	Vibrations in 24 hours.
87,5	11	48	20	1,29		"					
					1,245	684	682	86147,37	2,540	8,143	86158,073
91	11	59	44	1,20							
					1,160	681,5	679,5	86146,44	2,203	9,200	86157,843
92,5	12	11	05,5	1,12							
					1,080	683,5	681,5	86147,18	1,911	9,729	86158,820
93,5	12	22	29	1,04							
					1,005	679,75	677,75	86145,79	1,655	10,046	86157,491
94	12	33	48,75	0,97							
91,7								Mean.....			86158,047
								Rate of the Clock.....			— 0,26
								Vibrations in 24 hours..			86157,787

Hygrometer 47 *dry.* Barometer 30,133

96	1	49	46	1,175							
					1,1325	675,75	673,75	86144,28	2,101	11,210	86157,591
97	2	02	01,75	1,09							
					1,0525	676,5	674,5	86144,57	1,815	11,421	86157,806
97	2	12	18,25	1,015							
					0,9775	677	675,0	86144,76	1,566	11,379	86157,705
96,8	2	23	35,25	0,940							
					0,905	678,75	676,75	86145,41	1,342	11,336	86158,088
96,8	2	34	54	0,87							
96,72								Mean.....			86157,798
								Rate of the Clock.....			— 0,26
								Vibrations in 24 hours..			86157,538

Hygrometer 43,5 *dry.* Barometer 30,098

95	4	01	34,25	1,27							
					1,2325	679,75	677,75	86145,79	2,489	10,469	86158,748
94,5	4	12	53,75	1,195							
					1,1525	680,5	678,5	86146,07	2,176	10,258	86158,504
94	4	24	14,25	1,11							
					1,0725	680,5	678,5	86146,07	1,885	10,099	86158,054
93,75	4	35	34,75	1,035							
					0,9975	683,75	681,75	86147,28	1,630	9,888	86158,798
93	4	46	58,5	0,96							
94,5								Mean.....			86158,526
								Rate of the Clock.....			— 0,26
								Vibrations in 24 hours...			86158,266

19*th February* A. M. "

Rate of the Clock.—0,64 Hygrometer 13 *dry.* Barometer 30,149

81,5	7	38	46	1,350							
					1,3125	698,5	696,5	86152,61	2,823	4,865	86160,298
81,5	7	50	24,5	1,275							
					1,235	699	697	86152,79	2,499	4,865	86160,154
81,5	8	02	03,5	1,195							
					1,1575	697	695	86152,08	2,195	4,817	86159,092
81,75	8	13	40,5	1,12							
					1,08	698,75	696,75	86152,70	1,911	5,023	86159,634
82	8	25	19,25	1,04							
81,65								Mean.....			86159,795
								Rate of the Clock.....			— 0,64
								Vibrations in 24 hours..			86159,155

19th *February* A. M.

Hygrometer 12,3 *dry.* Barometer *Inches.* 30,133

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
83	9 52 53,25	1,30							
			1,2575	696,5	694,5	86151,90	2,591	5,605	86160,096
83,5	10 04 29,75	1,215							
			1,170	698,25	696,25	86152,52	2,243	5,711	86160,474
83,5	10 16 08	1,125							
			1,0825	697,75	695,75	86152,35	1,920	5,763	86160,033
83,75	10 27 45,75	1,04							
			1,0000	698,25	696,25	86152,52	1,639	5,869	86159,928
84	10 39 24	0,96							
83,55						Mean.....			86160,133
						Rate of the Clock.....			— 0,64
						Vibrations in 24 hours..			86159,493

Hygrometer 29,5 *dry.* Barometer 30,133

90,25	11 45 50,5	1,305							
			1,265	684,0	682,0	86147,37	2,622	8,936	86158,928
92	11 57 14,5	1,225							
			1,1775	682,25	680,25	86146,72	2,272	9,623	86158,615
93,5	12 08 36,75	1,13							
			1,09	682,75	680,75	86146,91	1,947	10,205	86159,062
94,75	12 19 59,5	1,05							
			1,015	681,75	679,75	86146,53	1,688	10,628	86158,846
95,5	12 31 21,25	0,98							
93,2						Mean.....			86158,863
						Rate of the Clock.....			— 0,64
						Vibrations in 24 hours..			86158,223

Hygrometer 42,5 *dry.* Barometer 30,128

97,5	1 37 26,75	1,275							
			1,235	677,5	675,5	86144,94	2,499	11,633	86159,072
97,5	1 48 44,25	1,195							
			1,1525	676,75	674,75	86144,66	2,176	11,569	86158,405
97,2	2 00 01	1,11							
			1,0675	679,5	677,5	86145,70	1,867	11,463	86159,031
97	2 11 20,5	1,025							
			0,9875	679,5	677,5	86145,70	1,608	11,210	86158,518
96	2 22 40	0,95							
97,04						Mean.....			86158,756
						Rate of the Clock.....			— 0,64
						Vibrations in 24 hours..			86158,116

Hygrometer 50 *dry.* Barometer 30,103

91,5	3 34 31,5	1,265							
			1,2225	685,5	683,5	86147,92	2,499	9,095	86159,514
91,5	3 45 57	1,18							
			1,1375	685,5	683,5	86147,92	2,120	9,253	86159,293
92,25	3 57 22,5	1,095							
			1,0575	684,25	682,25	86147,46	1,832	9,465	86158,757
92,5	4 08 46,75	1,02							
			0,9825	686,25	684,25	86148,20	1,582	9,306	86159,088
91,5	4 20 13	0,945							
91,85						Mean.....			86159,163
						Rate of the Clock.....			— 0,64
						Vibrations in 24 hours..			86158,523

19th February A. M.

Hygrometer 48 *dry*. Barometer 30,103 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
91,5	4 25 43,5	1,325							
			1,2875	686,5	684,5	86148,29	2,716	8,672	86159,678
89,5	4 37 10	1,25							
			1,215	689,5	687,5	86149,38	2,419	7,974	86159,773
88,2	4 48 39,5	1,18							
			1,145	691,5	689,5	86150,11	2,148	7,551	86159,809
87,5	5 00 11	1,11							
			1,025	692	690,0	86150,29	1,721	7,339	86159,350
87,2	5 11 43	0,94							
88,78						Mean.....			86159,853
						Rate of the Clock....			— 0,64
						Vibrations in 24 hours..			86159,213

20th February A. M.

Rate of the Clock—0,56 Hygrometer 14 *dry*. Barometer 30,113

81	6 41 56	1,125							
			1,0875	702,5	700,5	86154,02	1,938	4,653	86160,610
81	6 53 38,52	1,05							
			1,01	705,75	703,75	86155,15	1,789	4,653	86161,592
81	7 05 24,5	0,97							
			0,93	702	700,0	86153,85	1,416	4,695	86159,961
81,2	7 17 06,25	0,89							
			0,855	705,5	703,5	86155,07	1,198	4,780	86161,048
81,4	7 28 51,75	0,82							
81,12						Mean.....			86160,543
						Rate of the Clock....			— 0,56
						Vibrations in 24 hours..			86159,983

Hygrometer 16,5 *dry*. Barometer 30,148

83	9 54 23,5	1,335							
			1,2925	697	695	86152,08	2,737	5,605	86160,422
83,5	10 06 00,5	1,25							
			1,2125	694	692	86151,01	2,409	5,774	86159,193
83,8	10 17 34,5	1,175							
			1,13	697	695	86152,08	2,092	5,880	86160,052
84	10 29 11,5	1,085							
			1,0405	698,5	696,5	86152,61	1,774	6,028	86160,412
84,5	10 40 50	0,996							
83,76						Mean.....			86160,020
						Rate of the Clock.....			— 0,56
						Vibrations in 24 hours..			86159,460

Hygrometer 22,5 *dry*. Barometer 30,154

84,7	10 49 53,75	1,325							
			1,2825	693,75	691,75	86150,92	2,695	6,409	86160,024
85,6	11 01 27,5	1,24							
			1,20	692,00	690,0	86150,29	2,359	7,000	86159,649
87,5	11 12 59,5	1,16							
			1,1175	690,5	688,5	86149,75	2,046	7,614	86159,412
88,5	11 24 30	1,075							
			1,0375	691,25	689,25	86150,02	1,764	8,090	86159,874
89,75	11 36 01,25	1,000							
87,21						Mean.....			86159,740
						Rate of the Clock.....			— 0,560
						Vibrations in 24 hours..			86159,180

20th February A. M.

Hygrometer 46 *dry* — Barometer 30,139 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
90	12 42 39,5	1,385	1,3425	683	681	86147	2,953	8,672	86158,625
91	12 54 02,5	1,300	1,26	685	683	86147,73	2,601	9,200	86159,541
92,5	12 05 27,5	1,22	1,175	685,75	683,75	86148,01	2,262	9,623	86159,895
93	12 16 53,25	1,13	1,09	682,0	680	86146,63	1,947	9,941	86158,518
94	12 28 15,25	1,05							
92,1						Mean.....			86159,145
						Rate of the Clock.....			— 0,25
						Vibrations in 24 hours..			86158,585

Hygrometer 46 *dry*. — Barometer 30,113

95,5	3 04 50,5	1,330	1,29	678,0	676	86145,13	2,825	10,681	86158,636
95	3 16 08,5	1,25	1,2125	679,5	677,5	86145,70	2,409	10,575	86158,684
95	3 27 28	1,175	1,1325	681,5	679,5	86146,44	2,101	10,364	86158,904
94	3 38 49,5	1,09	1,0525	683	681,0	86147	1,815	10,046	86158,861
93,5	3 50 12,5	1,015							
94,6						Mean.....			86158,771
						Rate of the Clock.....			— 0,56
						Vibrations in 24 hours..			86158,211

For the LENGTH of the PENDULUM

Second Set. (L.)

22d February A. M.

Rate of the Clock +0,39 — Hygrometer 12,3 *dry.* — Barometer *Inches.* 30,156

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
81	7 51 14	1,425							
			1,3775	700,0	698	86153,14	3,109	4,653	86160,902
81	8 02 54	1,33							
			1,285	700,75	698,75	86153,40	2,706	4,653	86160,759
81	8 14 34,75	1,24							
			1,195	701,5	699,5	86153,67	2,340	4,759	86160,769
81,5	8 26 16,25	1,15							
			1,11	703,75	701,75	86154,46	2,019	4,865	86161,343
81,5	8 39 00	1,07							
81,2						Mean			86160,943
						Rate of the Clock			+ 0,39
						Vibrations in 24 hours			86161,333
		Hygrometer 17 *dry.*				Barometer 30,183			
82,5	9 46 14,5	1,295							
			1,25	700,5	698,5	86153,32	2,560	5,288	86161,408
82,5	9 57 55	1,205							
			1,1625	702,5	700,5	86154,02	2,214	5,288	86161,522
82,5	10 09 37,5	1,12							
			1,0775	701,75	699,75	86153,76	1,902	5,340	86161,002
82,75	10 21 19,25	1,035							
			0,99	701,75	699,75	86153,76	1,606	5,446	86160,812
83	10 33 01	0,945							
82,65						Mean			86161,186
						Rate of the Clock			+ 0,39
						Vibrations in 24 hours			86161,576
		Hygrometer 27,5 *dry.*				Barometer 30,163			
88,5	11 40 09,5	1,33							
			1,28	690	688,0	86149,57	2,684	7,931	86160,185
89	11 51 39,5	1,23							
			1,19	688,75	686,75	86149,11	2,320	8,196	86159,626
89,75	12 03 08,25	1,15							
			1,11	688	686	86148,84	2,019	8,419	86159,278
91	12 14 36,25	1,07							
			1,025	687,25	685,25	86148,56	1,721	9,095	86159,376
92	12 26 03,5	0,98							
90,5						Mean			86159,614
						Rate of the Clock			+ 0,39
						Vibrations in 24 hours			86160,004
		Hygrometer 45,5 *dry.*				Barometer 30,143			
92,5	1 34 33,25	1,37							
			1,3225	682,25	680,25	86146,72	2,866	9,835	86159,421
94	1 45 55,5	1,275							
			1,2275	680,25	678,25	86145,98	2,469	10,364	86158,813
95	1 57 15,75	1,18							
			1,14	681,0	679,0	86146,26	2,129	10,628	86159,017
95,25	2 08 36,75	1,10							
			1,0575	681,25	679,25	86146,35	1,832	10,628	86158,810
95	2 20 58	1,015							
94,35						Mean			86159,015
						Rate of the Clock			+ 0,39
						Vibrations in 24 hours			86159,405

22d February A. M.

Hygrometer 57,5 *dry.* — Barometer 30,093 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
93,5	3 44 20	1,195							
			1,1575	682,5	680,5	86146,81	2,195	10,046	86159,051
94	3 55 42,5	1,12							
			1,08	684,5	682,5	86147,55	1,911	9,941	86159,402
93	4 07 07	1,04							
			1,005	687,5	685,5	86148,65	1,655	9,306	86159,611
91	4 18 34,5	0,97							
			0,935	690	688,0	86149,57	1,432	8,883	86159,885
91	4 30 04,5	0,90							
92,5						Mean.....			86159,487
						Rate of the Clock.....			+ 0,39
						Vibrations in 24 hours..			86159,877

Hygrometer 53 *dry.* — Barometer 30,093

90,5	4 34 21,5	1,35							
			1,3125	688	686	86148,84	2,823	8,354	86160,017
89	4 45 49,5	1,275							
			1,2325	690,5	688,5	86149,75	2,489	7,826	86160,065
88	4 57 20	1,19							
			1,145	693	691,0	86150,07	2,148	7,403	86159,621
87	5 08 53	1,10							
			1,0625	693,75	691,75	86150,92	1,850	7,085	86159,855
86,5	5 20 26,75	1,025							
88,2						Mean.....			86159,890
						Rate of the Clock.....			+ 0,39
						Vibrations in 24 hours..			86160,280

23d February A. M.
Rate of the Clock—0,89 — Hygrometer 16,5 *dry.* — Barometer 30,097

80,5	6 32 14	1,325							
			1,2775	701,5	699,5	86153,67	2,674	4,442	86160,786
80,5	6 43 55,5	1,23							
			1,185	702	700,0	86153,85	2,301	4,442	86160,597
80,5	6 55 37,5	1,14							
			1,095	704	702,0	86154,55	1,964	4,442	86160,956
80,5	7 07 21,5	1,05							
			1,015	703,5	701,5	86154,37	1,688	4,442	86160,500
80,5	7 19 05	0,98							
80,5						Mean.....			86160,710
						Rate of the Clock.....			— 0,89
						Vibrations in 24 hours..			86159,820

Hygrometer 20 *dry.* — Barometer 30,153

83	9 44 12,5	1,275							
			1,2275	699	697	86152,79	2,469	5,499	86160,758
83	9 55 51,5	1,18							
			1,135	700	698	86153,14	2,111	5,499	86160,750
83	10 07 31,5	1,09							
			1,045	701	699,0	86153,49	1,789	5,605	86160,884
83,5	10 19 12,5	1,00							
			0,9625	702	700,0	86153,85	1,518	5,816	86161,184
84	10 31 54,5	0,925							
83,3						Mean.....			86160,894
						Rate of the Clock.....			— 0,89
						Vibrations in 24 hours..			86160,004

23d *February* A. M.

Hygrometer 24,5 *dry.* — Barometer *Inches.* 30,153

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
84	10 34 57	1,28							
			1,235	696,75	694,75	86151,99	2,499	5,964	86160,453
84,2	10 46 33,75	1,19							
			1,1425	698,25	696,25	86152,52	2,139	6,176	86160,835
85	10 58 12	1,095							
			1,0475	698,5	696,5	86152,61	1,798	6,557	86160,965
86	11 09 50,5	1,000							
			0,9625	696,5	694,5	86151,90	1,518	6,980	86160,398
87	11 21 27	0,925							
85,24						Mean.....			86160,663
						Rate of the Clock.....			— 0,89
						Vibrations in 24 hours..			86159,773

Hygrometer 46,5 *dry.* — Barometer 30,113

92	12 26 55	1,34							
			1,2925	684,5	682,5	86147,55	2,737	9,412	86159,699
92,5	12 38 19,5	1,245							
			1,1975	684,75	682,75	86147,64	2,348	9,729	86159,717
93,5	12 49 44,25	1,15							
			1,1125	682,75	680,75	86146,91	2,051	10,258	86159,219
95	1 01 07	1,075							
			1,0375	684,75	682,75	86147,64	1,764	10,787	86160,191
96	1 12 31,75	1,000							
93,8						Mean.....			86159,706
						Rate of the Clock.....			— 0,89
						Vibrations in 24 hours..			86158,816

Hygrometer 54 *dry.* — Barometer 30,060

95	3 08 19,75	1,31							
			1,265	679,25	677,25	86145,60	2,622	10,575	86158,797
95	3 19 39	1,22							
			1,18	681	679	86146,26	2,281	10,575	86159,116
95	3 31 00	1,14							
			1,098	680	678	86145,88	1,975	10,575	86158,430
95	3 42 20	1,056							
			1,023	684,5	682,5	86147,55	1,715	10,046	86159,311
92,5	3 53 44,5	0,99							
94,5						Mean.....			86158,914
						Rate of the Clock.....			— 0,89
						Vibrations in 24 hours...			86158,024

24th *February* A. M. "

Rate of the Clock—1,34 — Hygrometer 21,5 *dry.* — Barometer 30,090

82	7 33 29,5	1,325							
			1,2775	701	699	86153,49	2,674	5,203	86161,367
82,6	7 45 10,5	1,23							
			1,185	702,5	700,5	86154,02	2,301	5,414	86161,735
83	7 56 53	1,14							
			1,095	704	702	86154,55	1,964	5,499	86162,013
83	8 08 37	1,05							
			1,0125	705,5	703,5	86155,07	1,680	5,499	86162,249
83	8 20 22,5	0,975							
82,72						Mean.....			86161,847
						Rate of the Clock.....			— 1,34
						Vibrations in 24 hours..			86160,507

24th February A. M.

Hygrometer 28 *dry* — Barometer 30,155 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
83,5	9 43 45	1,275							
			1,225	700,75	698,75	86153,4	2,455	5,803	86161,658
83,75	9 55 25,75	1,175							
			1,1325	700,25	698,25	86153,23	2,101	5,816	86161,147
83,75	10 07 06	1,09							
			1,0475	701,5	699,5	86153,67	1,798	5,869	86161,337
84	10 18 47,5	1,005							
			0,965	703,5	701,5	86154,37	1,532	5,922	86161,824
84	10 30 31	0,925							
83,8						Mean.....			86161,492
						Rate of the Clock.....			— 1,34
						Vibrations in 24 hours..			86160,152

Hygrometer 39,5 *dry.* — Barometer 30,101

89,75	11 50 59	1,299							
			1,248	692,5	690,5	86150,47	2,552	8,619	86161,641
91	12 02 31,5	1,197							
			1,148	693,5	691,5	86150,83	2,159	8,989	86161,978
91,5	12 14 05	1,099							
			1,047	694,5	692,5	86151,19	1,796	9,200	86162,186
92	12 25 39,5	0,995							
			0,9475	692	690	86150,29	1,471	9,306	86161,067
92	12 37 11,5	0,90							
91,25						Mean.....			86161,718
						Rate of the Clock.....			— 1,34
						Vibrations in 24 hours..			86160,378

Hygrometer 56 *dry.* — Barometer 30,068

98	1 43 29,5	1,37							
			1,31	678	676	86145,13	2,812	11,844	86159,786
98	1 54 47,5	1,25							
			1,205	676,5	674,5	86144,57	2,379	11,844	86158,793
98	2 06 04	1,16							
			1,1175	680	678	86145,88	2,046	11,738	86159,664
97,5	2 17 24	1,075							
			1,0375	681	679	86146,26	1,764	11,633	86159,657
97,5	2 28 45	1,00							
97,8						Mean.....			86159,475
						Rate of the Clock.....			— 1,340
						Vibrations in 24 hours..			86158,135

Hygrometer 57 *dry.* — Barometer 30,039

95	3 49 44	1,26							
			1,21	682,5	680,5	86146,81	2,399	10,469	86159,678
94,5	4 01 06,5	1,16							
			1,125	685	683	86147,73	2,074	10,258	86160,062
94	4 12 31,5	1,09							
			1,05	684,5	682,5	86147,55	1,806	9,941	86159,297
93	4 23 56	1,01							
			0,975	688	686	86148,84	1,557	9,518	86159,915
92	4 35 24	0,94							
93,7						Mean.....			86159,738
						Rate of the Clock.....			— 1,34
						Vibrations in 24 hours..			86158,398

24th February A. M.

Hygrometer *55 dry* — Barometer 30,039 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
92	4 39 46	1,30	1,26	687,5	685,5	86148,65	2,601	8,883	86160,134
90	4 51 13,5	1,22	1,185	690	688	86149,57	2,301	8,037	86159,928
88	5 02 43,5	1,15	1,1125	692	690	86150,29	2,051	7,403	86159,744
87	5 14 15,5	1,075	1,040	695,5	693,5	86151,55	1,772	7,085	86160,407
86,5	5 25 51	1,005							
88,7						Mean			86160,053
						Rate of the Clock			— 1 340
						Vibrations in 24 hours			86158,713

25th February A. M. "
Rate of the Clock—0,73 — Hygrometer 4,5 *dry.* — Barometer 30,085

78,5	7 20 48,5	1,45	1,400	704,5	702,5	86154,72	3,211	3,596	86161,527
78,5	7 32 33	1,35	1,305	705	703,0	86154,89	2,790	3,596	86161,276
78,5	7 44 18	1,26	1,2175	706	704,0	86155,24	2,429	3,701	86161,370
79	7 56 04	1,175	1,135	707,5	705,5	86155,76	2,111	3,807	86161,678
79	8 07 51,5	1,095							
78,7						Mean			86161,463
						Rate of the Clock			— 0,730
						Vibrations in 24 hours			86160,733

Hygrometer 1,5 *dry.* — Barometer 30,105

79,5	9 15 57,5	1,25	1,1875	708,75	706,75	86156,19	2,310	4,019	86162,519
79,5	9 27 46,25	1,125	1,075	706,75	704,75	86155,50	1,893	4,019	86161,412
79,5	9 39 33	1,025	0,9825	706,5	704,5	86155,41	1,582	4,019	86161,011
79,5	9 51 19,5	0,94	0,905	707,5	705,5	86155,76	1,342	4,071	86161,173
79,75	10 03 07	0,87							
79,55						Mean			86161,529
						Rate of the Clock			— 0,73
						Vibrations in 24 hours			86160,799

Hygrometer 11 *dry.* — Barometer 30,109

82	11 15 50	1,505	1,4525	702,5	700,5	86154,02	3,457	5,288	86162,765
83	11 27 32,5	1,40	1,345	700	698	86153,14	2,964	5,499	86161,603
83	11 39 12,5	1,29	1,2325	700,5	698,5	86153,32	2,489	5,499	86161,308
83	11 50 53	1,175	1,110	702,5	700,5	86154,02	2,019	5,499	86161,538
83	12 02 35,5	1,045							
82,8						Mean			86161,804
						Rate of the Clock			— 0,73
						Vibrations in 24 hours			86161,074

25th February A. M.

Hygrometer 26 *dry.* Barometer *Inches.* 30,053

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
86,5	1 21 00,25	1,225							
			1,1775	692,25	690,25	86150,38	2,272	7,403	86160,055
88,5	1 32 32,5	1,13							
			1,09	692,0	690,0	86150,29	1,947	7,931	86160,168
89	1 44 04,5	1,05							
			1,015	691	689,0	86149,93	1,688	8,143	86159,761
89,5	1 55 35,5	0,98							
			0,9425	693,5	691,5	86150,83	1,455	8,354	86160,639
90	2 07 09	0,905							
88,7						Mean			86160,156
						Rate of the Clock			— 0,73
						Vibrations in 24 hours			86159,426

Hygrometer 39 *dry.* Barometer 30,031

90	3 14 55	1,405							
			1,3575	688,75	686,75	86149,11	3,019	8,566	86160,695
90,5	3 26 23,75	1,30							
			1,2575	691	689	86149,93	2,591	8,724	86161,245
90,75	3 37 54,75	1,215							
			1,1725	692,25	690,25	86150,38	2,252	8,74	86161,356
90,5	3 49 17	1,13							
			1,0975	689,5	687,5	86149,38	1,974	8,566	86159,920
90	4 00 46,5	1,065							
90,35						Mean			86160,806
						Rate of the Clock			— 0,73
						Vibrations in 24 hours			86160,076

26th February A. M.

Rate of the Clock—0,75 Hygrometer 10 *dry.* Barometer 30,041

81	7 26 55	1,43							
			1,3775	699,5	697,5	86152,97	3,109	4,759	86160,838
81,5	7 38 34,5	1,325							
			1,2775	700,25	698,25	86153,23	2,674	4,917	86160,821
81,75	7 50 14,75	1,23							
			1,185	703	701,0	86154,19	2,301	5,023	86161,714
82	8 01 57,75	1,14							
			1,0975	703,5	701,5	86154,37	1,974	5,076	86161,420
82	1 13 41,25	1,055							
81,65						Mean			86161,198
						Rate of the Clock			— 0,75
						Vibrations in 24 hours			86160,448

Hygrometer 16,5 *dry.* Barometer 30,046

83	9 45 34,25	1,30							
			1,245	701,75	699,75	86153,76	2,540	5,499	86161,799
83	9 57 16	1,19							
			1,1425	701,5	699,5	86153,67	2,139	5,499	86161,308
83	10 09 57,5	1,095							
			1,050	701	699,0	86153,49	1,806	5,541	86160,837
83,2	10 20 38,5	1,005							
			0,965	702,5	700,5	86154,02	1,526	5,647	86161,193
83,5	10 32 21	0,925							
83,14						Mean			86161,284
						Rate of the Clock			— 0,75
						Vibrations in 24 hours			86160,534

26th February A. M.

Hygrometer 34 *dry.* — Barometer *Inches.* 30,048

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			'			+	+	
88	11 43 03,5	1, 40							
			1,3475	687,5	685,5	86148,65	2,975	7,826	86159,451
89	11 54 31	1,295							
			1,2475	689,5	687,5	86149,38	2,550	8,170	86160,100
89,75	12 06 00,5	1,2							
			1,1525	689,25	687,25	86149,29	2,176	8,407	86159,773
90	12 17 29,75	1,105							
			1,065	687,75	685,75	86148,74	1,858	8,509	86159,107
90,25	12 28 57,5	1,025							
89,4						Mean			86159,608
						Rate of the Clock			— 0,75
						Vibrations in 24 hours			86158,858

Hygrometer 55 *dry.* — Barometer 30,029

95	1 35 54	1,505							
			1,4525	677	675	86144,76	3,457	10,575	86158,792
95	1 47 11	1,4							
			1,355	677,75	675,75	86145,04	3,008	10,734	86158,782
95,75	1 58 28,75	1,31							
			1,2635	679	677	86145,51	2,611	10,945	86159,066
96	2 09 47,75	1,217							
			1,176	679,75	677,75	86145,79	2,264	10,998	86159,052
96	2 21 07,5	1,135							
95,55						Mean			86158,923
						Rate of the Clock			— 0,75
						Vibrations in 24 hours			86158,173

Hygrometer 57 *dry.* — Barometer 30,012

95,5	3 33 33,25	1,45							
			1,40	678,75	676,75	86145,41	3,211	10,521	86159,142
94,25	3 44 52	1,35							
			1,3025	680	678	86145,88	2,780	10,215	86158,875
94	3 56 12	1,255							
			1,215	682,5	680,5	86146,81	2,419	9,888	86159,167
92,75	4 07 34,5	1,175							
			1,1375	683,25	681,25	86147,09	2,120	9,465	86158,675
92	4 19 57,75	1,100							
93,7						Mean			86158,965
						Rate of the Clock			— 0,75
						Vibrations in 24 hours			86158,215

Hygrometer 55 *dry.* — Barometer 30,006

92	4 21 23,5	1,325							
			1,275	684,0	682	86147,37	2,663	9,095	86159,128
91	4 32 47,5	1,225							
			1,185	685	683	86147,73	2,301	8,672	86158,703
90	4 44 12,5	1,145							
			1,115	689	687	86149,19	2,037	8,037	86159,264
88	4 55 41,5	1,085							
			1,055	692	690	86150,29	1,824	7,403	86159,517
87	5 07 13,5	1,025							
89,6						Mean			86159,153
						Rate of the Clock			— 0,75
						Vibrations in 24 hours			86158,403

For the LENGTH of the PENDULUM.

THIRD SET. (L.)

1st *March* A. M.

Rate of the Clock —0,15 Hygrometer 1,5 *moist.* Barometer *Inches.* 30,051

Temperature.	Time of Coincidence. h.	'	"	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	*Observed* Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
						"			+	+	
80,5	7	51	20,5	1,275							
					1,2125	705,0	703,0	86154,89	2,409	4,442	86161,741
80,5	8	03	05,5	1,150							
					1,10	706	704	86155,24	1,983	4,442	86161,674
80,5	8	14	51,5	1,050							
					1,005	707	705	86155,59	1,655	4,442	86161,687
80,5	8	26	38,5	0,970							
					0,935	705,75	703,75	86155,15	1,432	4,494	86161,076
80,75	8	38	24,25	0,90							
80,55								Mean			86161,545
								Rate of the Clock			— 0,15
								Vibrations in 24 hours			86160,395
				Hygrometer 2,5 *dry.*				Barometer 30,053			
81,75	9	53	39,5	1,295							
					1,2465	701,5	699,5	86153,67	2,546	4,970	86161,186
81,75	10	05	21	1,198							
					1,1515	701,5	699,5	86153,67	2,172	4,981	86160,823
81,8	10	17	02,5	1,105							
					1,0675	702,75	700,75	86154,11	1,867	5,034	86161,011
82	10	28	45,25	1,030							
					0,9975	702	700	86153,85	1,630	5,076	86160,556
82	10	40	27,25	0,965							
81,86								Mean			86160,894
								Rate of the Clock			— 0,15
								Vibrations in 24 hours			86160,744
				Hygrometer 29 *dry.*				Barometer 30,040			
86	11	53	15,5	1,255							
					1,2075	692,25	690,25	86150,38	2,389	7,297	86160,066
88,5	12	04	47,75	1,16							
					1,12	691,5	689,5	86150,11	2,055	8,143	86160,308
90	12	16	19,25	1,08							
					1,045	691	689	86149,93	1,789	8,672	86160,391
91	12	27	50,25	1,01							
					0,975	690,5	688,5	86149,75	1,557	9,095	86160,402
92	12	39	20,75	0,94							
89,5								Mean			86160,292
								Rate of the Clock			— 0,15
								Vibrations in 24 hours			86160,142
				Hygrometer 51,5 *dry.*				Barometer 30,021			
94	1	47	12,5	1,325							
					1,275	682,5	680,5	86146,81	2,663	10,312	86159,785
94,75	1	58	35	1,225							
					1,1825	683	681,0	86147	2,291	10,353	86159,644
94,2	2	09	58	1,14							
					1,1025	683,25	681,25	86147,09	1,962	10,194	86159,246
94	2	21	21,25	1,065							
					1,031	682,75	680,75	86146,91	1,742	10,152	86158,804
94	2	32	44	0,997							
94,19								Mean			86159,370
								Rate of the Clock			— 0,15
								Vibrations in 24 hours			86159,220

1st *March* A. M.

Hygrometer 52,5 *dry.* — *Inches.* Barometer 30,011

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
94	3 57 23,25	1,425							
			1,3725	682,75	680,75	86146,91	3,087	10,046	86160,043
93,5	4 08 46	1,32							
			1,275	684	682,0	86147,37	2,663	9,835	86159,868
93	4 20 10	1,23							
			1,185	685,5	683,5	86147,92	2,301	9,570	86159,791
92,25	4 31 35,5	1,14							
			1,05	686,5	684,5	86148,29	1,806	9,359	86159,455
92	4 43 02	0,96							
92,95						Mean.....			86159,539
						Rate of the Clock.....			— 0,15
						Vibrations in 24 hours..			86159,389

Hygrometer 51 *dry.* — Barometer *30,011*

91,5	4 56 58,5	1,300							
			1,25	687,25	685,25	86148,56	2,560	8,798	86159,918
90,1	5 08 25,75	1,20							
			1,1575	689,5	687,5	86149,38	2,195	8,270	86159,845
89	5 19 55,25	1,115							
			1,0775	691,25	689,25	86150,02	1,902	7,826	86159,748
88	5 33 26,5	1,04							
			1,015	695,75	693,75	86151,64	1,688	7,509	86159,430
87,5	5 43 02,25	0,99							
89,22						Mean.....			86159,735
						Rate of the Clock.....			— 0,15
						Vibrations in 24 hours..			86159,585

3d *March* A. M.
Rate of the Clock +0,55 — Hygrometer 29 *moist.* — Barometer 30,051

76	7 09 26	1,355							
			1,305	705,25	703,25	86154,98	2,790	2,538	86160,308
76	7 21 11,25	1,255							
			1,2125	703,5	701,5	86154,37	2,409	2,538	86159,317
76	7 32 54,75	1,170							
			1,135	706,25	704,25	86155,33	2,111	2,644	86160,085
76,5	7 44 41	1,100							
			1,0625	705,5	703,5	86155,07	1,850	2,750	86159,670
76,5	7 56 26,5	1,025							
76,2						Mean.....			86159,845
						Rate of the Clock.....			+ 0,55
						Vibrations in 24 hours..			86160,395

Hygrometer 26 *moist.* — Barometer 30,090

79	9 44 55,5	1,325							
			1,270	701	699,0	86153,49	2,643	3,807	86159,940
79	9 55 36,5	1,215							
			1,1675	703,75	701,75	86154,46	2,233	3,870	86160,563
79,3	10 07 20,25	1,12							
			1,0775	704,00	702,0	86154,55	1,902	3,976	86160,428
79 5	10 29 04,25	1,035							
			0,9925	703,5	701,5	86154,37	1,614	4,082	86160,066
79,8	10 30 47,75	0,95							
79,3						Mean.....			86160,249
						Rate of the Clock.....			+ 0,55
						Vibrations in 24 hours..			86160,799

3d *March* A. M.

Hygrometer 10 *dry.* Barometer *Inches.* 30,073

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
84,5	11 59 08	1,275	1,230	696	694	86151,72	2,479	6,239	86160,438
85	12 10 44	1,185	1,1425	697	695	86152,08	2,139	6,408	86160,627
85,3	12 22 21	1,100	1,0625	696,25	694,25	86151,81	1,850	6,513	86160,173
85,5	12 33 57,25	1,025	0,9875	698,25	696,25	86152,52	1,608	6,557	86160,685
85,5	12 45 35,5	0,95							
85,16						Mean.....			86160,481
						Rate of the Clock.....			+ 0,55
						Vibrations in 24 hours..			86161,031

Hygrometer 27 *dry.* Barometer 30,026

85,5	1 57 10,5	1,25	1,2025	697	695	86152,08	2,369	7,032	86161,481
87,75	2 08 47,5	1,155	1,110	694,5	692,5	86151,19	2,019	7,561	86160,770
88	2 20 22	1,065	1,020	697	695,0	86152,08	1,705	7,614	86161,399
88	2 31 59	0,975	0,940	696,5	694,5	86151,90	1,448	7,658	86161,006
88,2	2 43 35,5	0,905							
87,49						Mean.....			86161,164
						Rate of the Clock.....			+ 0,55
						Vibrations in 24 hours..			86161,714

Hygrometer 37 *dry.* Barometer 30,013

89,5	4 05 38,75	1,32	1,2675	688,25	686,25	86148,93	2,633	8,249	86159,812
89,5	4 17 07	1,215	1,1725	688	686	86148,84	2,252	8,143	86159,234
89	4 28 35	1,13	1,095	690,5	688,5	86149,75	1,964	7,826	86159,540
88	4 40 05,5	1,060	1,0275	690,5	688,5	86149,75	1,736	7,508	86158,988
87,5	4 51 36	0,995							
88,70						Mean.....			86159,394
						Rate of the Clock.....			+ 0,55
						Vibrations in 24 hours...			86159,944

4th *March* A. M.

Rate of the Clock—0,25 Hygrometer 31 *moist.* Barometer 30,066

80,5	9 52 58	1,305	1,2525	702,5	700,5	86154,02	2,570	4,442	86161,032
80,5	10 04 40,5	1,20	1,155	701,75	699,75	86153,76	2,186	4,547	86160,493
81	10 16 22,25	1,11	1,0675	706,5	704,5	86155,41	1,867	4,706	86161,983
81,25	10 28 08,75	1,025	0,9925	704,5	702,5	86154,72	1,614	4,917	86161,251
82	10 39 53,25	0,96							
81,05						Mean.....			86161,190
						Rate of the Clock.....			— 0,250
						Vibrations in 24 hours..			86160,940

4th March A. M.

Hygrometer 17 *moist.* — Barometer 30,058 *Inches.*

Temperature.	Time of Coincidence. h. ' "	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc. +	Correction for Temperature. +	Vibrations in 24 hours.
85	11 51 56	1,46							
			1,4025	697,5	695,5	86152,26	3,223	6,134	86161,617
84	12 03 33,5	1,345							
			1,2975	695	693,0	86151,37	2,758	5,922	86160,050
84	12 15 08,5	1,25							
			1,2075	698,25	696,25	86152,52	2,389	5,880	86161,249
83,8	12 26 46,75	1,165							
			1,1275	699,25	697,25	86152,82	2,066	5,837	86160,723
83,8	12 38 26	1,09							
84,12						Mean.....			86160 910
						Rate of the Clock.....			— 0.250
						Vibrations in 24 hours..			86160,660

Hygrometer 11,5 *moist.* — Barometer 30,038

84	12 56 18	1,385							
			1,3325	697	695	86152,08	2,909	5,668	86160,657
83	1 07 55	1,28							
			1,2375	699,5	697,5	86152,97	2,509	5,330	86160,809
82,2	1 19 34,5	1,195							
			1,151	700,25	698,25	86153,23	2,170	5,436	86160,836
83,5	1 31 14,75	1,107							
			1,066	699,25	697,25	86152,88	1,862	6,239	86160,981
86	1 42 54	1,025							
83,74						Mean.....			86160,821
						Rate of the Clock.....			— 0,25
						Vibrations in 24 hours..			86160,571

Hygrometer 5,3 *dry.* — Barometer 30,012

83,5	3 17 20,5	1,415							
			1,3625	697	695	86152,08	3,042	5,605	86160,723
83	3 28 57,5	1,31							
			1,2075	695,75	693,75	86151,64	2,633	5,469	86159,742
83	3 40 33,25	1,225							
			1,1875	698,75	696,75	86152,70	2,310	5,457	86160,467
82,8	3 52 12	1,15							
			1,1125	698,75	696,75	86152,70	2,051	5,351	86160,102
82,5	4 03 50,75	1,075							
82,96						Mean.....			86160,259
						Rate of the Clock.....			— 0,25
						Vibrations in 24 hours..			86160,009

9th March A. M. "
Rate of the Clock —0,57 — Hygrometer 1 *moist.* — Barometer 30,151

81	7 40 11,5	1,345							
			1,2875	703,0	701,0	86154,19	2,716	4,653	86161,559
81	7 51 54,5	1,23							
			1,1775	704,25	702,25	86154,63	2,272	4,759	86161,631
81,5	8 03 38,75	1,125							
			1,085	704,50	702,5	86154,72	1,929	4,928	86161,577
81,8	8 15 23,25	1,045							
			1,010	705,25	703,25	86154,98	1,671	5,013	86161,664
81,9	8 27 08,5	0,975							
81,44						Mean.....			86161,608
						Rate of the Clock.....			— 0,57
						Vibrations in 24 hours..			86161,038

9th March A. M.

Hygrometer 11 *dry*. Barometer *Inches.* 30,156

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
82	9 51 07,5	1,34	1,285	703,00	701,0	86154,19	2,705	5,076	86161,971
82	10 02 50,5	1,23	1,1775	702,75	700,75	86154,11	2,272	5,097	86161,479
82,1	10 14 33,25	1,125	1,0875	701,75	699,75	86153,76	1,938	5,309	86161,006
83	10 26 15	1,05	1,015	702,75	700,75	86154,11	1,688	5,541	86161,339
83,2	10 37 57,75	0,98							
82,46						Mean			86161,449
						Rate of the Clock			— 0,57
						Vibrations in 24 hours			86160,879

Hygrometer 16 *dry*. Barometer 30,123

82,5	11 52 40,75	1,400	1,3475	700,00	698,0	86153,14	2,975	5,224	86161,339
82,2	12 04 20,75	1,295	1,2475	701,50	699,5	86153,67	2,550	5,161	86161,381
82,2	12 16 02,25	1,200	1,155	701,75	699,75	86153,76	2,186	5,118	86161,064
82	12 27 44	1,11	1,07	704	702,0	86154,55	1,876	5,076	86161,502
82	12 39 28	1,03							
82,4						Mean			86161,322
						Rate of the Clock			— 0,57
						Vibrations in 24 hours			86160,752

Hygrometer 20,5 *dry*. Barometer 30,081

84,5	1 54 15,5	1,345	1,2925	700	698,0	86153,14	2,737	6,134	86162,011
84,5	2 05 55,5	1,24	1,185	699,75	697,75	86153,04	2,301	6,028	86161,369
84	2 17 35,25	1,13	1,0825	703,75	701,75	86154,46	1,920	5,922	86162,302
84	2 29 19	1,035	0,9925	703,5	701,5	86154,37	1,614	5,922	86161,906
84	2 41 02,5	0,95							
84,2						Mean			86161,897
						Rate of the Clock			— 0,57
						Vibrations in 24 hours			86161,327

Hygrometer 23 *dry*. Barometer 30,091

84	3 51 51	1,315	1,260	699,00	697	86152,79	2,601	5,816	86161,201
83,5	4 03 30	1,205	1,1625	701,00	699	86153,49	2,214	5,711	86161,415
83,5	4 15 11	1,12	1,08	703,00	701	86154,19	1,911	5,605	86161,706
83	4 26 54	1,04	1,005	705	703	86154,89	1,655	5,499	86162,044
83	4 38 39	0,97							
83,4						Mean			86161,592
						Rate of the Clock			— 0,57
						Vibrations in 24 hours			86161,022

10*th March* A. M.

Rate of the Clock —0,64 Hygrometer 6 *moist.* Barometer 30,121 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
80	6 21 39,5	1,400							
			1,3475	702,00	700,0	86153,85	2,975	4,230	86161,055
80	6 33 21,5	1,295							
			1,2475	704,00	702,0	86154,55	2,550	4,230	86161,330
80	6 45 05,5	1,200							
			1,155	704,25	702,25	86154,63	2,186	4,293	86161,109
80,3	6 56 49,75	1,11							
			1,070	703,25	701,25	86154,28	1,876	4,463	86160,619
80,8	7 08 33	1,03							
80,2						Mean			86161,028
						Rate of the Clock			— 0,64
						Vibrations in 24 hours			86160,388

Hygrometer 3,5 *dry.* Barometer 30,157

81,8	9 57 15,5	1,310							
			1,255	702,5	700,5	86154,02	2,581	5,034	86161,635
82	10 08 58	1,2							
			1,1525	705	703,0	86154,89	2,176	5,118	86162,184
82,2	10 20 43	1,105							
			1,065	705	703	86154,89	1,858	5,288	86162,036
82,8	10 32 28	1,025							
			0,9875	706,25	704,25	86155,33	1,608	5,457	86162,395
83	10 44 14,25	0,95							
82,36						Mean			86162,063
						Rate of the Clock			— 0,64
						Vibrations in 24 hours			86161,423

Hygrometer 13,5 *dry.* Barometer 30,153

83,5	10 57 34	1,28							
			1,23	703,5	701,5	86154,37	2,479	5,774	86162,623
83,8	11 09 17,5	1,18							
			1,135	704	702,0	86154,55	2,111	5,880	86162,541
84	11 21 01,5	1,09							
			1,0475	704,75	702,75	86154,81	1,798	5,922	86162,530
84	11 32 46,25	1,005							
			0,965	705,25	703,25	86154,98	1,526	5,922	86162,428
84	11 44 32,5	0,925							
83,86						Mean			86162,531
						Rate of the Clock			— 0,64
						Vibrations in 24 hours			86161,891

Hygrometer 25 *dry.* Barometer 30,131

88	12 57 45,5	1,40							
			1,35	694,25	692,25	86151,10	2,986	7,466	86161,552
87,3	1 09 19,75	1,30							
			1,25	695,25	693,25	86151,46	2,560	7,360	86161,380
87,5	1 20 55	1,20							
			1,15	697,5	695,5	86152,26	2,167	7,360	86161,787
87,3	1 32 32,5	1,10							
			1,055	698,25	696,25	86152,52	1,842	7,276	86161,620
87,1	1 44 10,75	1,01							
87,44						Mean			86161,585
						Rate of the Clock			— 0,64
						Vibrations in 24 hours			86160,945

10*th March A. M.*

Hygrometer 21,5 *dry.* — Barometer *Inches.* 30,073

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
89,3	3 11 47,75	1,355							
			1,3025	692,5	690,5	86150,47	2,780	8,206	86161,456
89,5	3 25 20,25	1,25							
			1,20	691	689,0	86149,93	2,359	8,353	86160,642
90	3 34 51,25	1,15							
			1,105	692,75	690,75	86150,56	2,001	8,312	86160,873
89,3	3 46 24	1,06							
			1,025	693,5	691,5	86150,83	1,721	8,143	86160,693
89,2	3 57 57,5	0,99							
89,46						Mean.....			86160,916
						Rate of the Clock.....			+ 0,64
						Vibrations in 24 hours..			86160,276

12*th March A. M.*

Rate of the Clock +0,20 — Hygrometer 12 *moist.* — Barometer 30,076

79,5	6 33 45	1,275							
			1,2275	703,0	701,0	86154,19	2,469	4,174	86160,833
80	6 45 28	1,18							
			1,14	706,75	704,75	86155,50	2,129	4,272	86161,901
80,2	6 57 14,75	1,10							
			1,0625	705,75	703,75	86155,15	1,850	4,392	86161,392
80,8	7 09 00,5	1,025							
			0,9925	706,25	704,25	86155,33	1,614	4,611	86161,555
81	7 20 46,75	0,96							
80,3						Mean.....			86161,420
						Rate of the Clock.....			+ 0,20
						Vibrations in 24 hours..			86161,620

Hygrometer 7,5 *moist.* — Barometer 30,124

82	9 41 54,25	1,320							
			1,2675	702	700	86153,85	2,633	5,076	86161,559
82	9 53 36,25	1,215							
			1,1675	703,5	701,5	86154,37	2,233	5,182	86161,785
82,5	10 05 19,75	1,12							
			1,0775	703,25	701,25	86154,28	1,902	5,393	86161,575
83	10 17 03	1,035							
			0,9975	705,5	703,5	86155,07	1,630	5,541	86162,241
83,2	10 28 48,5	0,96							
82,54						Mean.....			86161,790
						Rate of the Clock.....			+ 0,20
						Vibrations in 24 hours...			86161,990

Hygrometer 3 *moist.* — Barometer 30,113

83,8	10 32 29,5	1,405							
			1,3525	700	698	86153,14	2,997	5,922	86162,059
84,2	10 44 09,5	1,3							
			1,25	699,5	697,5	86152,97	2,560	6,176	86161,706
85	10 55 49	1,2							
			1,15	700,5	698,5	86153,32	2,167	6,408	86161,895
85,3	11 07 29,5	1,1							
			1,055	700,25	698,25	86153,23	1,824	6,514	86161,568
85,5	11 19 09,75	1,01							
84,76						Mean.....			86161,807
						Rate of the Clock.....			+ 0,20
						Vibrations in 24 hours..			86162,007

12*th March* A. M.

Hygrometer 1,5 *dry.* — Barometer 30,078 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
83,5	1 33 29,5	1,420							
			1,3625	697	695	86152,08	3,042	6,134	86161,255
85,5	1 45 06,5	1,305							
			1,255	695,25	693,25	86151,46	2,581	6,557	86160,597
85,5	1 56 41,75	1,205							
			1,1575	698	696	86152,44	2,195	6,705	86161,340
86,2	2 08 19,75	1,11							
			1,07	696,75	694,75	86151,99	1,876	7,064	86160,930
87,2	2 19 56,5	1,03							
85,58						Mean.....			86161,030
						Rate of the Clock.....			+ 0,20
						Vibrations in 24 hours...			86161,230

Hygrometer 3,5 *dry.* — Barometer 30,072

87,3	2 32 58,75	1,28							
			1,235	695,25	693,25	86151,46	2,499	7,254	86161,213
87	2 44 34	1,19							
			1,1475	695,5	693,5	86151,55	2,157	7,043	86160,749
86,3	2 56 09,5	1,105							
			1,065	697	695,0	86152,08	1,858	6,768	86160,706
85,7	3 07 46,5	1,025							
			0,990	697,5	695,5	86152,26	1,608	6,705	86160,573
86	3 19 24	0,955							
86,46						Mean.....			86160,810
						Rate of the Clock.....			+ 0,20
						Vibrations in 24 hours..			86161,010

For the LENGTH of the PENDULUM.

Fourth Set. (L.)

1823. 13*th March* A. M.

Rate of the Clock +0,15 — Hygrometer 24,5 *moist.* — Barometer 30,103 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
80	7 34 29,5	1,50							
			1,45	699	697	86152,79	3,686	4,346	86159,812
80,5	7 42 08,5	1,40							
			1,35	699,25	697,25	86152,88	2,986	4,547	86160,413
81	7 53 47,75	1,30							
			1,25	701,25	699,25	86153,58	2,560	4,653	86160,793
81	8 05 29	1,20							
			1,1525	703,25	701,25	86154,28	2,176	4,716	86161,172
81,3	8 17 12,25	1,105							
80,76						Mean.....			86160,550
						Rate of the Clock.....			+ 0 15
						Vibrations in 24 hours..			86160,700

Hygrometer 18,5 *dry.* — Barometer 30,031

82,2	9 50 25	1,40							
			1,35	699,5	697,5	86152,97	2,986	5,224	86161,180
82,5	10 02 4,5	1,30							
			1,25	700,75	698,75	86153,40	2,560	6,351	86162,311
82,8	10 13 45,25	1,20							
			1,1575	700,25	698,25	86153,23	2,195	5,457	86160,882
83	10 25 26,5	1,115							
			1,0725	702	700,0	86153,85	1,885	5,668	86161,403
84	10 37 08,5	1,03							
82,9						Mean.....			86161,444
						Rate of the Clock.....			+ 0,15
						Vibrations in 24 hours..			86161,594

Hygrometer 17,5 *dry.* — Barometer 30,125

90	11 53 33	1,44							
			1,3825	689	687	86149,19	3,132	8,672	86160,994
91	12 05 02	1,325							
			1,2725	689,75	687,75	86149,47	2,653	8,777	86160,900
90,5	12 16 31,75	1,22							
			1,1725	690	688	86149,57	2,252	8,820	86160,682
91,2	12 28 01,75	1,125							
			1,0825	689,75	687,75	86149,47	1,920	9,243	86160,632
92,5	12 39 31,5	1,04							
91,04						Mean.....			86160,805
						Rate of the Clock.....			+ 15
						Vibrations in 24 hours..			86160,955

Hygrometer 44,5 *dry.* — Barometer 30,098

95	1 44 43	1,40							
			1,35	680,25	678,25	86145,98	2,986	10,575	86159,541
95	1 56 03,25	1,30							
			1,2525	681,5	679,5	86146,44	2,570	10,575	86159,585
95	2 07 24,75	1,205							
			1,16	683,75	681,75	86147,28	2,224	10,553	86160,057
94,9	2 18 48,5	1,115							
			1,075	680	678,0	86145,88	1,893	10,512	86158,284
94,8	2 30 08,5	1,035							
94,94						Mean.....			86159,367
						Rate of the Clock.....			+ 0,15
						Vibrations in 24 hours..			86159,517

13th March A. M.

Hygrometer 48,5 *dry.* Barometer 30,081 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
94,9	3 43 13,5	1,39							
			1,340	682,5	680,5	86146,81	2,932	10,279	86160,021
93,7	3 54 36	1,29							
			1,245	683,5	681,5	86147,18	2,540	9,677	86159,397
93	4 05 59,5	1,20							
			1,160	686,25	684,25	86148,20	2,224	9,687	86160,111
92,8	4 17 25,75	1,12							
			1,085	685,25	683,25	86147,83	1,929	9,518	86159,277
92,2	4 28 51	1,05							
93,32						Mean.....			86159,702
						Rate of the Clock.....			+ 0,15
						Vibrations in 24 hours..			86159,852

14th March A. M. Rate of the Clock +0,34 Hygrometer 4 *moist.* Barometer 30,086

80,4	6 22 27	1,40							
			1,350	703	701,0	86154,19	2,986	4,399	86161,575
80,4	6 34 10	1,30							
			1,250	703,25	721,25	86154,28	2,560	4,484	86161,324
80,8	6 45 53,25	1,20							
			1,155	705,25	703,25	86154,98	2,186	4,611	86161,777
81	6 57 38,5	1,11							
			1,0675	706,25	704,25	86155,33	1,867	4,801	86161,998
81,7	7 09 24,75	1,025							
80,86						Mean.....			86161,669
						Rate of the Clock.....			+ 0,34
						Vibrations in 24 hours..			86162,009

Hygrometer 4 *moist.* Barometer 30,133

82,8	9 37 20,5	1,42							
			1,365	700,75	698,75	86153,40	3,053	5,457	86161,910
83	9 49 01,25	1,31							
			1,255	701,75	699,75	86153,76	2,581	5,520	86161,861
83,1	10 00 43	1,20							
			1,1575	703	701,0	86154,19	2,195	4,780	86161,165
83,5	10 12 26	1,115							
			1,070	703,5	701,5	86154,37	1,876	5,815	86162,062
84	10 24 09,5	1,025							
83,28						Mean.....			86161,750
						Rate of the Clock.....			+ 0,34
						Vibrations in 24 hours..			86162,090

Hygrometer 0 Barometer 30,133

84	10 27 38,75	1,435							
			1,3825	698,75	696,75	86152,70	3,132	6,069	86161,901
84,7	10 39 17,5	1,33							
			1,2775	699	697,0	86152,79	2,674	6,451	86161,915
85,8	10 50 56,5	1,225							
			1,180	698,75	696,75	86152,70	2,281	6,937	86161,918
87	10 02 35,25	1,135							
			1,095	698,25	696,25	86152,52	1,964	7,614	86162,098
89	10 14 13,5	1,055							
86,1						Mean.....			86161,750
						Rate of the Clock.....			+ 0,34
						Vibrations in 24 hours..			86162,090

14th March A. M.

Hygrometer 44 *dry*. Barometer 30,013 *Inches*.

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
96	1 25 23,5	1,45							
			1,395	680,5	678,5	86146,07	3,189	11,252	86160,411
97	1 36 44	1,34							
			1,29	680,75	678,75	86146,16	2,727	11,421	86160,308
97	1 48 04,75	1,24							
			1,195	681,75	679,75	86146,53	2,340	11,506	86160,376
97,4	1 59 26,5	1,15							
			1,11	683	681,0	86147,00	2,019	11,379	86160,396
96,4	2 10 49,5	1,07							
96,76								Mean.....	86160,373
								Rate of the Clock.....	+ 0,34
								Vibrations in 24 hours..	86160,713

Hygrometer 51 *dry*. Barometer 30,085

96,3	2 14 56,25	1,400							
			1,350	683,25	681,25	86147,09	2,986	10,850	86160,926
95	2 26 19,5	1,300							
			1,255	682,0	680	86146,63	2,581	10,786	86160,998
96	2 37 41,5	1,21							
			1,1675	684,25	682,25	86147,46	2,233	11,040	86160,733
96,2	2 49 05,75	1,125							
			1,0875	684	682,0	86147,37	1,938	11,146	86160,454
96,5	3 00 29,75	1,05							
96								Mean.....	86160,778
								Rate of the Clock.....	+ 0,34
								Vibrations in 24 hours..	86161,118

Hygrometer 48 *dry*. Barometer 30,072

96,5	3 03 39,5	1,425							
			1,375	680,25	678,25	86145,98	3,098	11,104	86160,182
96	3 14 59,75	1,325							
			1,280	682,25	680,25	86146,72	2,685	10,956	86160,361
95,8	3 26 22	1,235							
			1,1925	684	682,0	86147,37	2,330	10,829	86160,529
95,4	3 37 46	1,150							
			1,115	685,25	683,25	86147,83	2,037	10,881	86160,548
95,1	3 49 11,25	1,08							
95,76								Mean.....	86160,405
								Rate of the Clock.....	+ 0,34
								Vibrations in 24 hours..	86160,745

16th March A. M.
Rate of the Clock —0,30 Hygrometer 35,5 *moist*. Barometer 30,141

76,7	7 12 26,75	1,48							
			1,425	706,75	704,75	86155,50	3,327	2,898	86161,724
77	7 24 13,5	1,37							
			1,32	707,5	705,5	86155,76	2,855	2,961	86161,676
77	7 36 01	1,27							
			1,225	708	706	86155,93	2,459	3,003	86161,392
77,2	7 47 49	1,18							
			1,14	709,5	707,5	86156,45	2,129	3,109	86161,688
77,5	7 59 38,5	1,10							
77,08								Mean.....	86161,620
								Rate of the Clock.....	— 0,30
								Vibrations in 24 hours..	86161,320

16th March A. M.

Hygrometer 32,5 *moist.* — Barometer 30,164 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
79,4	9 35 29,25	1,47							
			1,415	702,75	700,75	86154,11	3,281	4,003	86161,394
80	9 47 12	1,36							
			1,305	705	703,0	86154,89	2,790	4,272	86160,952
80,2	9 58 57	1,25							
			1,20	705	703	86154,89	2,359	4,315	86161,564
80,2	10 10 42	1,15							
			1,11	706,5	704,5	86155,41	2,019	4,388	86161,817
80,5	10 22 28,5	1,07							
80,04								Mean.....	86161,682
								Rate of the Clock.....	— 0,300
								Vibrations in 24 hours..	86161,382

Hygrometer 9 *moist.* — Barometer 30,164

84	11 36 20,5	1,41							
			1,360	698,5	696,5	86152,61	3,031	6,028	86161,688
84,5	11 47 59	1,31							
			1,255	700,75	698,75	86153,40	2,581	6,239	86162,220
85	11 59 39,75	1,2							
			1,1525	700,50	698,50	86153,32	2,176	6,345	86161,841
85	12 11 20,25	1,105							
			1,060	703,75	701,75	86154,46	1,841	6,345	86162,646
85	12 23 04	1,015							
84,7								Mean.....	86162,094
								Rate of the Clock.....	— 0,30
								Vibrations in 24 hours..	86161,794

Hygrometer 8,5 *dry.* — Barometer 30,121

84	1 35 59,5	1,14							
			1,3475	694,5	692,5	86151,19	2,975	6,028	86160,193
84,5	1 47 34	1,295							
			1,2475	695,75	693,75	86151,64	2,550	6,239	86160,429
85	1 59 09,75	1,2							
			1,155	694,25	692,25	86151,10	2,186	6,345	86159,631
85	2 10 44	1,11							
			1,0675	697	695,0	86152,08	1,867	6,599	86160,546
86,2	2 22 21	1,025							
84,94								Mean.....	86160,200
								Rate of the Clock.....	— 0,30
								Vibrations in 24 hours..	86159,900

Hygrometer 22,5 *dry.* — Barometer 30,153

89,2	2 34 03,5	1,42							
			1,3675	690,75	688,75	86149,84	3,064	8,227	86161,131
89,7	2 45 34,25	1,315							
			1,265	691,50	689,50	86150,11	2,622	8,397	86160,599
90	2 57 05,75	1,215							
			1,1675	690	688,0	86149,57	2,233	8,460	86160,263
90	3 08 35,75	1,12							
			1,0775	694,25	692,25	86151,10	1,902	8,481	86160,269
90,1	3 20 10	1,035							
89,8								Mean.....	86160,564
								Rate of the Clock.....	— 0,30
								Vibrations in 24 hours..	86160,264

18th March A M.

Rate of the Clock —1,10 Hygrometer 4,5 *dry.* Barometer 30,056 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature	Vibrations in 24 hours.
	h. ' "			"			+	+	
80,5	6 50 49,25	1,41							
			1,355	704,75	702,25	86154,81	3,008	4,547	86162,365
81	7 02 34	1,30							
			1,250	707	705	86155,59	2,560	4,716	86162,866
81,3	7 14 21	1,20							
			1,15	707	705	86155,59	2,167	4,843	86162,600
81,6	7 26 08	1,10							
			1,1025	709	707	86156,28	1,992	4,970	86163,242
81,9	7 37 57	1,105							
81,26						Mean.....			86162,768
						Rate of the Clock.....			— 1,10
						Vibrations in 24 hours..			86161,668

Hygrometer 1 *dry.* Barometer 30,059

83,5	9 15 09	1,425							
			1,3675	700	698	86153,14	3,064	5,647	86161,851
83,2	9 26 49	1,31							
			1,265	703	701	86154,19	2,622	5,562	86162,374
83	9 38 32	1,22							
			1,175	704,75	702,75	86154,81	2,262	5,499	86162,571
83	9 50 16,75	1,13							
			1,0825	705,75	703,75	86155,15	1,920	5,562	86162,632
83,3	10 02 02,5	1,035							
83,2						Mean.....			86162,357
						Rate of the Clock.....			— 1,10
						Vibrations in 24 hours..			86161,257

Hygrometer 15,5 *dry.* Barometer 30,077

89,5	11 16 55,75	1,40							
			1,35	692	693	86150,29	2,986	8,566	86161,842
91	11 28 27,75	1,30							
			1,25	690,75	688,75	86149,84	2,560	9,200	86161,600
92,5	11 39 58,5	1,20							
			1,1525	692	690	86150,29	2,176	9,771	86162,237
93,7	11 51 30,5	1,105							
			1,065	689	687	86149,19	1,851	10,173	86161,221
94,4	12 03 59,95	1,025							
92,22						Mean.....			86161,725
						Rate of the Clock.....			— 1,10
						Vibrations in 24 hours..			86160,625

Hygrometer 42,5 *dry.* Barometer 30,004

96,5	1 02 41,5	1,405							
			1,3525	682	680	86146,63	2,997	11,315	86160,943
97	1 14 03,5	1,30							
			1,2500	682	680	86146,63	2,560	11,463	86160,653
97,2	1 25 25,5	1,20							
			1,1525	683	681	86147	2,176	11,263	86160,436
96,1	1 36 48,5	1,105							
			1,065	686,25	684,25	86148,20	1,858	11,019	86160,077
96	1 48 14,75	1,025							
96,56						Mean.....			86160,777
						Rate of the Clock.....			— 1,10
						Vibrations in 24 hours..			86159,677

18*th March* A. M.

Hygrometer 46,5 *dry.* Barometer *Inches.* 30,041

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
95,5	1 58 12	1,450							
			1,40	680,5	678,5	86146,07	3,211	10,554	86159,835
94,4	2 09 32,5	1,35							
			1,305	684,25	682,25	86147,46	2,790	10,236	86159,486
94	2 20 56,75	1,26							
			1,2175	683,75	681,75	86147,28	2,429	10,258	86159,967
94,5	2 32 20,5	1,175							
			1,1325	684,25	682,25	86147,46	2,101	10,364	86159,925
94,5	2 43 44,75	1,09							
94,58						Mean.....			86159,803
						Rate of the Clock.....			— 1,10
						Vibrations in 24 hours..			86158,703

19*th March* A. M. *Rate of the Clock* — 1,12 Hygrometer 11 *moist.* Barometer 30,062

80,5	7 25 43,75	1,425							
			1,375	705,25	703,25	86154,98	3,098	4,336	86162,414
80	7 37 29	1,325							
			1,2775	706	704	86155,24	2,674	4,188	86162,101
79,8	7 49 15	1,23							
			1,185	707	705	86155,59	2,301	4,167	86162,057
79,9	8 01 02	1,14							
			1,10	709,25	707,25	86156,36	1,983	4,209	86162,551
80	8 12 51,25	1,06							
80,04						Mean.....			86162,281
						Rate of the Clock.....			— 1,12
						Vibrations in 24 hours..			86161,161

Hygrometer 17,5 *moist.* Barometer 30,082

81,9	9 37 40,5	1,405							
			1,3525	703,25	701,25	86154,28	2,997	5,055	86162,331
82	9 49 23,75	1,3							
			1,2525	705,25	703,25	86154,98	2,570	5,076	86162,626
82	10 01 09	1,205							
			1,1575	705,25	703,25	86154,98	2,195	5,097	86162,272
82,1	10 12 54,25	1,11							
			1,0675	706,25	704,25	86155,33	1,867	6,288	86163,485
82,9	10 24 40,5	1,025							
82,18						Mean.....			86162,679
						Rate of the Clock.....			— 1,12
						Vibrations in 24 hours...			86161,559

Hygrometer 7 *dry.* Barometer 30,069

88,5	11 39 07,25	1,375							
			1,325	694	692	86151,01	2,877	8,079	86161,966
89,7	11 50 41,25	1,275							
			1,2275	694,50	692,5	86151,19	2,469	8,418	86162,077
90,1	12 02 15,75	1,18							
			1,135	695,25	693,25	86151,46	2,111	8,523	86162,094
90,2	12 13 51	1,09							
			1,05	694	692	86151,01	1,806	8,735	86161,551
91,1	12 25 25	1,01							
89,92						Mean.....			86161,922
						Rate of the Clock.....			— 1,120
						Vibrations in 24 hours..			86160,802

19*th March A. M.*

Hygrometer 34,5 *dry.* — Barometer 30,041 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
94,5	1 37 54,25	1,38							
			1,33	684	682	86147,37	2,898	10,617	86160,885
95,7	1 49 18,25	1,28							
			1,235	685	683	86147,73	2,499	11,146	86161,375
96	2 00 43,25	1,19							
			1,1475	683,75	681,75	86147,28	2,157	10,977	86160,414
95,9	2 12 07	1,105							
			1,065	687,75	685,75	86148,74	1,858	10,871	86161,469
95,5	2 23 34,75	1,025							
95,95								Mean.....	86161,036
								Rate of the Clock.....	— 1,12
								Vibrations in 24 hours..	86159,916

Hygrometer 53,5 *dry.* — Barometer 30,011

95	3 37 02 5	1,42							
			1,37	684,5	682,5	86147,55	3,075	10,448	86161,073
94,4	3 48 27	1,32							
			1,2725	685,5	683,5	86147,92	2,653	10,279	86160,852
94,2	3 59 52,5	1,225							
			1,160	687,5	685,5	86148,65	2,281	10,152	86161,083
93,8	4 11 20	1,135							
			1,1425	690,25	688,25	86149,66	2,139	9,898	86161,697
93	4 22 50,25	1,15							
94,08								Mean.....	86161,176
								Rate of the Clock.....	— 1,12
								Vibrations in 24 hours..	86160,056

20*th March A. M.*

Rate of the Clock —0,38 — Hygrometer 11 *moist.* — Barometer 30,064

79	6 37 45,5	1,525							
			1,470	703,5	701,5	86154,37	3,541	3,807	86161,718
79	6 49 29	1,415							
			1,3625	704,75	702,75	86154,81	3,042	3,913	86161,765
79,5	7 01 13,75	1,31							
			1,2575	706,25	704,25	86155,33	2,591	4,103	86162,024
79,9	7 13 00	1,205							
			1,1575	708	706,0	86155,93	2,195	4,188	86162,313
79,9	7 24 48	1,11							
79,46								Mean.....	86161,955
								Rate of the Clock.....	— 0,38
								Vibrations in 24 hours..	86161,575

Hygrometer 18 *moist.* — Barometer 30,116

80,8	9 31 11,75	1,515							
			1,460	702,50	700,50	86154,02	3,493	4,611	86162,124
81	9 42 54,25	1,405							
			1,3475	705,25	703,25	86154,98	2,975	4,653	86162,608
81	9 54 39,5	1,290							
			1,240	705,5	703,5	86155,07	2,519	4,695	86162,284
81,2	10 06 25	1,19							
			1,1425	707	705	86155,59	2,139	4,865	86162,594
81,8	10 18 12	1,095							
81,16								Mean.....	86162,403
								Rate of the Clock.....	— 0,38
								Vibrations in 24 hours..	86162,023

20th March A M.

Hygrometer 1 *moist.* — Inches. Barometer 30,073

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
85	11 23 06,5	1,495							
			1,4425	697,5	695,5	86152,26	3,409	6,409	86162,077
83,3	11 34 44	1,39							
			1,34	697,25	695,25	86152,17	2,942	6,588	86161,690
85,8	11 46 21,25	1,29							
			1,24	698,25	696,25	86152,52	2,519	6,557	86161,596
85,2	11 57 59,5	1,19							
			1,145	701	699,0	86153,49	2,148	6,512	86162,152
85,6	12 09 40,5	1,10							
85,38						Mean.....			86161,879
						Rate of the Clock.....			— 0,38
						Vibrations in 24 hours...			86161,499

Hygrometer 4,5 *dry.* — Barometer 30,055

83	1 08 36,75	1,43							
			1,38	704,25	702,25	86154,63	3,120	5,288	86163,038
82	1 20 21	1,33							
			1,285	702	700,0	86153,85	2,704	5,266	86161,820
82,9	1 32 03	1,24							
			1,1975	704	702	86154,55	2,350	5,478	86162,378
83	1 43 47	1,155							
			1,1125	704	702	86154,55	2,051	5,499	86162,100
83	1 55 31	1,07							
82,78						Mean.....			86162,334
						Rate of the Clock.....			— 0,38
						Vibrations in 24 hours..			86161,954

Hygrometer 16 *dry.* — Barometer 30,023

85,5	3 23 33,75	1,41							
			1,360	696,25	694,25	86151,81	3,031	6,768	86161,609
86,5	3 35 10	1,31							
			1,265	697,5	695,5	86152,26	2,622	7,058	86161,940
86,4	3 46 47,5	1,22							
			1,175	698,0	696,0	86152,44	2,262	6,831	86161,533
85,9	3 58 25,5	1,13							
			1,0875	700,5	698,5	86153,32	1,938	6,726	86161,984
85,9	4 10 06	1,045							
86,04						Mean.....			86161,767
						Rate of the Clock.....			— 0,380
						Vibrations in 24 hours..			86161,387

For the LENGTH of the PENDULUM.

First Set. (R.)

15th February A. M.

Rate of the Clock —0,27″ Hygrometer 6,25 *moist.* Barometer 30,170 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ′ ″			″			+	+	
80,5	7 19 42,5	1,45	1,4125	696	694	86151,72	3,269	4,484	86159,473
80,7	7 31 18,5	1,375	1,325	696	694	86151,72	2,876	4,547	86159,143
80,8	7 42 54,5	1,275	1,225	697,5	695,5	86152,25	2,459	4,611	86159,320
81	7 54 32	1,175	1,125	698,5	696,5	86152,61	2,074	4,695	86159,379
81,2	8 5 10,5	1,075							
80,84						Mean.....			86159,32875
						Rate of the Clock.....			— 0,270
						Vibrations in 24 hours..			86159,059

Hygrometer 5,65 *moist.* Barometer 30,193

80,5	8 21 24,5	1,375	1,325	695,5	693,5	86151,55	2,876	4,484	86158,910
80,7	8 33 00	1,275	1,225	696,5	694,5	86151,9	2,459	4,547	86158,906
80,8	8 44 36,5	1,175	1,1375	698	696	86152,42	2,120	4,611	86159,151
81	8 56 14,5	1,1	1,0625	698,5	696,5	86152,61	1,850	4,695	86159,155
81,2	9 7 53	1,025							
80,84						Mean.....			86159,0305
						Rate of the Clock.....			— 0,27
						Vibrations in 24 hours..			86158,76

Hygrometer 27,05 *dry.* Barometer 30,198

90,6	12 7 23,75	1,3	1,25	680,75	678,75	86146,16	2,560	8,862	86157,582
91,3	12 18 44,5	1,2	1,15	682	680	86146,63	2,167	9,242	86158,039
92,4	12 30 6,5	1,1	1,075	678	676	86145,13	1,893	9,708	86156,731
93,5	12 41 24,5	1,05	1,0125	680	678	86145,89	1,680	10,046	86157,616
94	12 52 44,5	0,975							
92,36						Mean.....			86157,492
						Rate of the Clock.....			— 0,27
						Vibrations in 24 hours..			86157,222

Hygrometer 40 *dry.* Barometer 30,103

94,3	2 11 29,5	1,325	1,275	677,5	675,5	86144,94	2,663	10,215	86157,818
94	2 22 47	1,225	1,1875	677,75	675,75	86145,04	2,310	10,152	86157,502
94	2 34 47,5	1,15	1,1125	677,75	675,75	86145,04	2,028	10,067	86157,135
93,6	2 45 22,5	1,075	1,0375	681	679	86146,25	1,764	9,919	86157,933
93,3	2 56 43,5	1,00							
93,84						Mean.....			86157,597
						Rate of the Clock.....			— 0,27
						Vibrations in 24 hours..			86157,327

16th *February A. M.*

Rate of the Clock +0,31 — Hygrometer 2,35 *dry.* — *Inches.* Barometer 30,160

Temperature.	Time of Coincidence. h. ' "	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc. +	Correction for Temperature. +	Vibrations in 24 hours.
75,7	6 48 19,75	1,325							
			1,275	697	695	86152,08	2,663	3,532	86158,275
81	6 59 56,75	1,225							
			1,1875	696	694	86151,72	2,310	4,716	86158,746
81,3	7 11 32,75	1,15							
			1,1125	698,25	696,25	86152,67	2,028	4,843	86159,541
81,6	7 23 11	1,075							
			1,0375	696,75	694,75	86151,99	1,764	4,907	86158,661
81,6	7 34 47,75	1,00							
80,24						Mean.....			86158,80575
						Rate of the Clock.....			+ 0,31
						Vibrations in 24 hours..			86159,116

Hygrometer 5,15 *dry.* — Barometer 30,192

82,8	8 43 14	1,375							
			1,325	692,5	690,5	86150,47	2,876	5,562	86158,908
83,5	8 54 48,5	1,275							
			1,225	694	692	86151,01	2,459	5,753	86159,222
83,7	9 6 20,5	1,175							
			1,1375	694,5	692,5	86151,19	2,120	5,816	86159,126
83,8	9 17 55	1,1							
			1,0625	695,5	693,5	86151,54	1,850	5,816	86159,206
83,7	9 29 30,5	1,025							
83,5						Mean.....			86159,1455
						Rate of the Clock.....			+ 0,31
						Vibrations in 24 hours..			86159,456

Hygrometer 8,3 *dry.* — Barometer 30,193

83,7	9 38 42,5	1,4							
			1,3625	690,75	688,75	86149,56	3,042	5,774	86158,376
83,6	9 50 13,25	1,325							
			1,275	693	691	86150,65	2,663	5,774	86159,087
83,7	10 1 46,25	1,225							
			1,175	696,75	694,75	86151,99	2,262	5,795	86160,047
83,7	10 13 23	1,125							
			1,100	692,75	690,75	86150,56	1,982	5,816	86158,358
83,8	10 24 55,75	1,075							
83,7						Mean.....			86158,967
						Rate of the Clock.....			+ 0,31
						Vibrations in 24 hours..			86159,277

Hygrometer 35,9 *dry.* — Barometer 30,188

93,8	12 29 27,5	1,2							
			1,1625	678	676	86145,13	2,214	9,983	86157,327
93,4	12 40 45,5	1,125							
			1,0875	680,5	678,5	86146,07	1,938	10,025	86158,033
94	12 52 6	1,05							
			1,0125	678,5	676,5	86145,32	1,680	10,363	86157,363
95	1 3 24,5	0,975							
			0,950	678	676	86145,13	1,479	10,744	86157,353
95,8	1 14 42,5	0,925							
94,4						Mean.....			86157,519
						Rate of the Clock.....			+ 0,31
						Vibrations in 24 hours..			86157,829

16th February A. M.

Hygrometer 47,25 *dry.* — Barometer 30,133 *Inches.*

Temperature.	Time of Coincidence. h. ' "	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc +	Correction for Temperature. +	Vibrations in 24 hours.
96,8	2 30 31	1,5							
			1,45	671,5	669,5	86142,66	3,445	11,315	86157,420
96,7	2 41 42,5	1,4							
			1,35	674,5	672,5	86143,96	2,986	11,315	86158,261
96,8	2 52 57	1,3							
			1,2625	671	669	86142,47	2,612	11,315	86156,397
96,7	3 4 8	1,225							
			1,1875	677,25	675,25	86144,85	2,310	11,104	86158,264
95,8	3 15 25,25	1,15							
96,56							Mean.....		86157,5855
							Rate of the Clock.....		+ 0,31
							Vibrations in 24 hours..		86157,895

17th February A. M.
Rate of the Clock —0,26 — Hygrometer 4,35 *dry.* — Barometer 30,159

81	7 56 12	1,275							
			1,2375	697,5	695,5	86152,26	2,509	4,695	86159,464
81,2	8 7 49,5	1,2							
			1,15	700	698	86153,14	2,167	4,737	86160,044
81,2	8 19 29,5	1,1							
			1,0625	698	696	86152,44	1,850	4,759	86159,049
81,3	8 31 7,5	1,025							
			0,9875	699,25	697,25	86152,88	1,598	4,822	86159,300
81,5	8 42 46,75	0,95							
81,24							Mean.....		86159,46425
							Rate of the Clock....		— 0,26
							Vibrations in 24 hours..		86159,204

Hygrometer 4,5 *dry.* — Barometer 30,168

81,8	8 55 54,75	1,425							
			1,375	694,5	692,5	86151,19	3,098	5,034	86159,322
82	9 7 29,25	1,325							
			1,2625	695,25	693,25	86151,46	2,612	5,161	86159,233
82,4	9 19 4,5	1,200							
			1,175	697,25	695,25	86152,17	2,262	5,224	86159,656
82,3	9 30 41,75	1,15							
			1,1	697,25	695,25	86152,17	1,982	5,203	86159,355
82,3	9 42 19	1,05							
82,16							Mean.....		86159,3915
							Rate of the Clock.....		— 0,26
							Vibrations in 24 hours..		86159,131

Hygrometer 24,05 *dry.* — Barometer 30,156

88,6	11 53 19	1,4							
			1,35	693	691	86150,65	2,986	7,952	86161,588
89	12 4 52	1,3							
			1,25	689,25	687,25	86149,29	2,560	8,164	86160,014
89,6	12 16 21,25	1,2							
			1,1625	683,25	681,25	86147,09	2,214	8,587	86157,891
91	12 27 44,5	1,125							
			1,0875	681,37	679,37	86146,39	1,938	9,221	86157,549
92,6	12 39 5,87	1,05							
90,16							Mean.....		86159,2605
							Rate of the Clock....		— 0,26
							Vibrations in 24 hours..		86159,00

17th February A. M.

Hygrometer 41,30 *dry*. Barometer 30,118 *Inches*.

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
89,8	2 15 53,75	1,325	1,2875	683	681	86147	2,716	8,291	86158,007
89,4	2 27 16,75	1,25	1,225	686,12	684,12	86148,15	2,459	8,037	86158,646
88,6	2 38 42,87	1,2	1,1625	688,88	686,88	86149,16	2,214	7,519	86158,893
87	2 50 11,75	1,125	1,0875	691,37	689,37	86150,06	1,938	7,022	86159,020
86,2	3 1 43,12	1,05							
88,2						Mean.....			86158,6415
						Rate of the Clock.....			— 0,26
						Vibrations in 24 hours..			86158,381

Hygrometer 35,85 *dry*. Barometer 30,048

85,4	4 13 13,5	1,45	1,4	689,25	687,25	86149,29	3,211	6,514	86159,015
85,4	4 24 42,75	1,35	1,30	692,75	690,75	86150,56	2,769	6,556	86159,885
85,6	4 36 15,5	1,25	1,1875	699,25	697,25	86152,88	2,310	6,641	86161,831
85,8	4 47 54,75	1,125	1,10	699	697,0	86152,79	1,982	6,577	86161,349
85,3	4 59 33,75	1,075							
85,5						Mean.....			86160,520
						Rate of the Clock.....			— 0,26
						Vibrations in 24 hours..			86160,260

18th February A. M.
Rate of the Clock — 0,26 Hygrometer 8,4 *dry*. Barometer 30,103

78,8	6 37 22,25	1,375	1,3375	699,5	697,5	86152,97	2,930	3,765	86159,665
79	6 49 1,75	1,3	1,25	698,75	694,75	86152,70	2,560	3,807	86159,067
79	7 00 40,5	1,2	1,1625	699	697	86152,79	2,214	3,849	86158,853
79,2	7 12 19,5	1,125	1,075	703,75	701,75	86154,46	1,893	3,934	86160,287
79,4	7 24 3,75	1,025							
79,08						Mean.....			86159,468
						Rate of the Clock.....			— 0,26
						Vibrations in 24 hours..			86159,208

Hygrometer 8,15 *dry*. Barometer 30,140

81	8 47 25,25	1,475	1,425	695,37	693,37	86151,51	3,327	4,653	86159,490
81	8 59 00,62	1,375	1,3125	696,25	694,25	86151,81	2,823	4,653	86159,286
81	9 10 36,87	1,25	1,2125	699,63	697,63	86153,01	2,409	4,695	86160,114
81,2	9 22 16,5	1,175	1,1375	698,12	696,12	86153,91	2,120	4,780	86160,810
81,4	9 33 54,62	1,1							
81,12						Mean.....			86159,925
						Rate of the Clock.....			— 0,26
						Vibrations in 24 hours..			86159,665

18th *February A. M.*

Inches.

Hygrometer 14,30 *dry.* Barometer 30,151

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
83	10 45 30,5	1,45							
			1,4	707,62	705,62	86155,80	3,211	5,668	86164,679
83,8	10 57 18,12	1,35							
			1,3	692,63	690,63	86150,52	2,769	5,906	86159,195
84,6	11 8 50,75	1,25							
			1,2	686,87	684,87	86148,42	2,359	6,451	86157,230
85,9	11 20 17,62	1,15							
			1,1125	695,13	693,13	86151,41	2,028	7,106	86160,544
87,7	11 31 52,75	1,075							
85						Mean.....			86160,412
						Rate of the Clock.....			— 0,26
						Vibrations in 24 hours...			86160,152

Hygrometer 46,20 *dry.* Barometer 30,141

94,8	12 46 43,5	1,45							
			1,4	674,25	672,25	86143,71	3,211	10,617	86157,538
95,4	12 57 57,75	1,35							
			1,3	676,62	674,62	86144,61	2,769	10,786	86158,165
95,4	1 9 14,37	1,25							
			1,2125	676,25	674,25	86144,47	2,409	10,871	86157,750
96	1 20 30,62	1,175							
			1,1375	676,38	674,38	86144,52	2,120	11,040	86157,680
96,2	1 31 47	1,1							
95,56						Mean.....			86157,78325
						Rate of the Clock.....			— 0,26
						Vibrations in 24 hours..			86157,523

Hygrometer 54,6 *dry.* Barometer 30,103

97	3 00 15,75	1,45							
			1,4	674	672	86143,62	3,211	11,336	86158,167
96,6	3 11 29,75	1,35							
			1,3125	675	673	86144	2,823	11,040	86158,863
95,6	3 22 44,75	1,275							
			1,225	678	676	86145,13	2,459	10,913	86158,592
96	3 34 2,75	1,175							
			1,1375	677,75	675,75	86145,04	2,120	10,956	86158,116
95,8	3 45 20,5	1,1							
96,2						Mean.....			86158,412
						Rate of the Clock.....			— 0,26
						Vibrations in 24 hours..			86158,152

19th *February A. M.* "

Rate of the Clock —0,64 Hygrometer 17 *dry.* Barometer 30,127

81,7	6 35 27	1,45							
			1,4	696,75	694,75	86151,99	3,211	4,949	86160,150
81,7	6 47 3,75	1,35							
			1,3125	698	696	86152,43	2,823	4,970	86160,223
81,8	6 58 41,75	1,275							
			1,225	695,25	693,25	86151,46	2,459	4,970	86158,889
81,7	7 10 17	1,175							
			1,1375	703,25	701,25	86154,28	2,120	4,928	86161,328
81,6	7 22 00,25	1,1							
81,7						Mean.....			86160,150
						Rate of the Clock.....			— 0,64
						Vibrations in 24 hours..			86159,510

19th February A. M.

Hygrometer 8,4 *dry.* Barometer *Inches.* 30,151

Temperature.	Time of Coincidence. h. ' "	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc. +	Correction for Temperature. +	Vibrations in 24 hours.
81,8	8 48 11,75	1,525							
			1,4625	695,75	693,75	86151,63	3,504	5,076	86160,210
82,2	8 59 47,5	1,4							
			1,35	697,75	695,75	86152,35	2,986	5,203	86160,539
82,4	9 11 25,25	1,3							
			1,25	697,35	695,35	86152,2	2,560	5,287	86160,047
82,6	9 23 2,6	1,2							
			1,1625	697,9	695,9	86152,4	2,214	5,372	86159,986
82,8	9 34 40,5	1,125							
82,36								Mean.....	86160,1955
								Rate of the Clock.....	— 1,64
								Vibrations in 24 hours..	86159,555

Hygrometer 15,85 *dry.* Barometer 30,144

84,8	10 51 34,5	1,3							
			1,25	693,75	691,75	86150,92	2,560	6,430	86159,910
85,6	11 3 8,25	1,2							
			1,1625	693	691	86150,65	2,214	6,895	86159,759
87	11 14 41,25	1,125							
			1,0875	691,37	689,37	86150,06	1,938	7,466	86159,464
88,3	11 26 12,62	1,05							
			1,0125	691,13	689,13	86149,97	1,680	8,058	86159,708
89,8	11 37 43,75	0,975							
87,1								Mean.....	86159,53525
								Rate of the Clock.....	— 0,64
								Vibrations in 24 hours..	86158,895

Hygrometer 44,55 *dry.* Barometer 30,144

95,8	12 45 8,5	1,175							
			1,1375	678,25	676,25	86145,23	2,120	10,956	86158,306
96	12 56 26,75	1,1							
			1,0625	681	679	86146,25	1,850	11,125	86159,225
96,6	1 7 47,75	1,025							
			1,00	678	676	86145,13	1,638	11,336	86158,104
97	1 19 5,75	0,975							
			0,9375	679,85	677,85	86145,83	1,440	11,548	86158,818
97,5	1 30 25,6	0,9							
96,6								Mean.....	86158,61325
								Rate of the Clock.....	— 0,64
								Vibrations in 24 hours...	86157,973

Hygrometer 51,5 *dry.* Barometer 30,110

94,6	2 34 49,37	1,475							
			1,425	677,38	675,38	86144,89	3,327	10,342	86158,559
94,3	2 46 6,75	1,375							
			1,325	680	678	86145,88	2,876	10,173	86158,929
93,8	2 57 26,75	1,275							
			1,225	682	680	86146,63	2,459	10,094	86159,183
93,7	3 8 48,75	1,175							
			1,150	682,25	680,25	86146,72	2,167	9,711	86158,598
92	3 20 11	1,125							
93,68								Mean.....	86158,81725
								Rate of the Clock.....	— 0,64
								Vibrations in 24 hours..	86158,177

20th February A. M.
Rate of the Clock —0,56

Hygrometer 12,5 *dry*. Barometer 30,134 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
81,6	7 44 10,75	1,4							
			1,35	699,75	697,75	86153,05	2,986	4,949	86160,985
81,8	7 55 50,5	1,3							
			1,25	698,25	696,25	86152,52	2,560	5,097	86160,177
82,3	8 7 28,75	1,2							
			1,15	699,5	697,5	86152,97	2,167	5,224	86160,361
82,4	8 19 8,25	1,1							
			1,0625	699,75	697,75	86153,05	1,850	5,245	86160,145
82,4	8 30 48	1,025							
82,1								Mean.....	86160,417
								Rate of the Clock.....	— 0,560
								Vibrations in 24 hours..	86159,857

Hygrometer 12,25 *dry*. Barometer 30,135

82,3	8 42 13,5	1,5							
			1,45	695,25	693,25	86151,46	3,445	5,182	86160,087
82,2	8 53 48,75	1,4							
			1,35	697,75	695,75	86152,35	2,986	5,182	86160,520
82,3	9 5 26,5	1,3							
			1,25	703	701	86154,20	2,560	5,182	86161,942
82,2	9 17 9,5	1,2							
			1,1625	694	692	86151,01	2,214	5,118	86158,342
82	9 28 43,5	1,125							
82,2								Mean.....	86160,22275
								Rate of the Clock.....	— 0,56
								Vibrations in 24 hours..	86159,663

Hygrometer 34,95 *dry*. Barometer 30,135

91	11 49 57,62	1,6							
			1,55	680,88	678,88	86146,21	3,904	8,671	86158,785
90	12 1 18,5	1,5							
			1,45	684	682	86147,37	3,445	8,291	86159,106
89,2	12 12 42,5	1,4							
			1,35	683	681	86147	2,986	8,121	86158,107
89,2	12 24 5,5	1,3							
			1,25	683	681	86147	2,560	8,164	86157,724
89,4	12 35 28,5	1,2							
89,76								Mean.....	86158,4305
								Rate of the Clock.....	— 0,56
								Vibrations in 24 hours..	86157,870

Hygrometer 51,25 *dry*. Barometer 30,130

94	1 41 28,75	1,575							
			1,525	675,75	673,75	86144,28	3,810	10,152	86158,242
94	1 52 44,5	1,475							
			1,425	678	676	86145,13	3,327	10,215	86158,672
94,3	2 4 2,5	1,375							
			1,325	676,25	674,25	86144,47	2,876	10,385	86157,731
94,8	2 15 18,75	1,275							
			1,225	679,87	677,87	86145,83	2,459	10,617	86158,906
95,4	2 26 38,62	1,175							
94,5								Mean.....	86158,38775
								Rate of the Clock.....	— 0,56
								Vibrations in 24 hours..	86157,828

20*th February A. M.*

Hygrometer 52 *dry.* — Barometer 30,097 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "		°	"			+	+	
88,3	3 57 52,75	1,475							
			1,425	682	680	86146,63	3,327	8,439	86158,396
91,6	4 9 14,75	1,375							
			1,325	685,8	683,8	86148,03	2,876	8,756	86159,662
89,8	4 20 40,62	1,275							
			1,2375	690,38	688,38	86149,7	2,607	8,058	86160,365
88,3	4 32 11	1,2							
			1,1625	690,5	688,5	86149,74	2,214	7,508	86159,462
87,2	4 43 41,5	1,125							
89,04									

Mean.....	86159,47125
Rate of the Clock.....	— 0,56
Vibrations in 24 hours..	86158,911

For the LENGTH of the PENDULUM.

Second Set. (R.)

1823. 22d *February A. M.*

Rate of the Clock +0,39 — Hygrometer 14,55 *dry.* — *Inches.* Barometer 30,187

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
81,5	8 50 44,5	1,675							
			1,600	694,75	692,75	86151,28	4,194	4,928	86160,402
81,8	9 2 19,25	1,525							
			1,4625	697,37	695,37	86152,20	3,504	4,991	86160,695
81,8	9 13 56,62	1,4							
			1,35	699,13	697,13	86152,83	2,986	5,033	86160,849
82	9 25 35,75	1,3							
			1,25	700,75	698,75	86153,41	2,560	5,118	86161,088
82,2	9 37 16,5	1,2							
81,86						Mean.....			86160,7585
						Rate of the Clock.....			+ 0,39
						Vibrations in 24 hours..			86161,148

Hygrometer 19,45 *dry.* — Barometer 30,189

83,3	10 46 1,75	1,5							
			1,4375	700	698	86153,14	3,386	5,816	86162,342
84,2	10 57 41,75	1,375							
			1,3375	694,25	692,25	86151,10	2,931	6,239	86160,270
85,3	11 9 16	1,3							
			1,25	694,62	692,62	86152,23	2,560	6,704	86161,494
86,4	11 20 50,62	1,2							
			1,1625	692,5	690,5	86150,47	2,214	7,191	86159,874
87,6	11 32 23,12	1,125							
85,36						Mean.....			86160,99525
						Rate of the Clock.....			+ 0,39
						Vibrations in 24 hours..			86161,385

Hygrometer 50,4 *dry.* — Barometer 30,160

93,2	12 40 46,5	1,5							
			1,4375	682,62	680,62	86146,86	3,386	9,729	86159,975
92,8	12 52 9,12	1,375							
			1,325	684,38	682,38	86147,51	2,876	9,644	86160,030
92,8	1 3 33,5	1,275							
			1,225	684,75	682,75	86148,9	2,459	9,517	86160,876
92,2	1 14 58,25	1,175							
			1,125	686,5	684,5	86148,14	2,074	9,454	86159,668
92,5	1 26 24,75	1,075							
92,7						Mean.....			86160,13725
						Rate of the Clock.....			+ 0,39
						Vibrations in 24 hours..			86160,527

Hygrometer 57.3 *dry.* — Barometer 30,115

93,5	2 35 38,75	1,65							
			1,60	676,75	674,75	86144,66	4,194	9,898	86158,752
93,3	2 46 55,5	1,55							
			1,4875	679,5	677,5	86145,69	3,625	9,750	86159,065
92,8	2 58 15	1,425							
			1,3875	678,5	676,5	86145,32	3,095	9,687	86158,102
93	3 9 33,5	1,35							
			1,30	682	680	86146,63	2,769	9,898	86159,297
93,8	3 20 55,5	1,25							
93,28						Mean.....			86158,804
						Rate of the Clock.....			+ 0,39
						Vibrations in 24 hours..			86159,194

23d *February A. M.*

Rate of the Clock — 0,89 Hygrometer 16,3 *dry.* Barometer *Inches.* 30,141

Temperature.	Time of Coincidence. h. ' "	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc. +	Correction for Temperature. +	Vibrations in 24 hours.
80,7	7 34 53,75	1,325							
			1,275	700,5	698,5	86153,32	2,663	4,589	86160,572
81	7 46 34,25	1,225							
			1,1875	701,25	699,25	86153,58	2,310	4,716	86160,606
81,3	7 58 15,5	1,15							
			1,10	702,25	700,25	86153,93	1,982	4,780	86160,792
81,3	8 9 57,75	1,05							
			1,0125	702	700	86153,85	1,680	4,843	86160,373
81,6	8 21 39,75	0,975							
81,18						Mean.....			86160,58575
						Rate of the Clock.....			— 0,89
						Vibrations in 24 hours..			86159,696

Hygrometer 17,7 *dry.* Barometer 30,148

81,8	8 40 00,5	1,425							
			1,375	698,25	696,25	86152,52	3,098	5,076	86160,694
82,2	8 51 38,75	1,325							
			1,275	702	700	86153,85	2,663	5,182	86161,695
82,3	9 3 20,75	1,225							
			1,175	697,87	695,87	86152,39	2,262	5,309	86159,961
82,8	9 14 58,62	1,125							
			1,0875	703	701	86154,20	1,938	5,351	86161,489
82,5	9 26 41,62	1,05							
82,32						Mean.....			86160,95975
						Rate of the Clock.....			— 0,89
						Vibrations in 24 hours..			86160,07

Hygrometer 37,45 *dry.* Barometer 30,129

89,2	11 33 59,37	1,375							
			1,325	688,13	686,13	86148,88	2,876	8,460	86160,216
90,8	11 45 27,5	1,275							
			1,225	688,25	686,25	86148,93	2,459	8,989	86160,378
91,7	11 56 55,75	1,175							
			1,125	687,75	685,75	86148,74	2,074	9,200	86160,014
91,8	12 8 23,5	1,075							
			1,0375	687,25	685,25	86148,56	1,764	9,264	86159,588
92	12 19 50,75	1,000							
91,1						Mean.....			86160,049
						Rate of the Clock.....			— 0,89
						Vibrations in 24 hours..			86159,159

Hygrometer 55,85 *dry.* Barometer 30,078

96,8	1 49 48,75	1,425							
			1,375	675,87	673,87	86144,33	3,098	11,019	86158,447
95,3	2 1 4,62	1,325							
			1,275	681	679	86146,25	2,663	10,934	86159,847
96,4	2 12 25,62	1,225							
			1,1875	679,38	677,38	86145,64	2,310	11,083	86159,033
96	2 23 45	1,15							
			1,1125	682,25	680,25	86146,72	2,028	10,744	86159,492
94,8	2 35 7,25	1,075							
95,86						Mean.....			86159,20475
						Rate of the Clock.....			— 0,89
						Vibrations in 24 hours..			86158,315

23d February A. M.

Hygrometer 55,1 *dry.* Barometer 30,051 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
91	4 10 11,75	1,525							
			1,475	681	679	86146,25	3,565	9,221	86159,036
92,6	4 21 32,75	1,425							
			1,375	682,75	680,75	86146,91	3,098	9,221	86159,229
91	4 32 55,5	1,325							
			1,275	685,5	683,5	86147,92	2,663	8,502	86159,085
89,2	4 44 21	1,225							
			1,1875	687,5	685,5	86148,65	2,310	7,910	86158,870
88,2	4 55 48,5	1,15							
90,4						Mean.....			86159,055
						Rate of the Clock.....			— 0,89
						Vibrations in 24 hours...			86158,165

24th February A. M.

Rate of the Clock —1,34 Hygrometer 20,5 *dry.* Barometer 30,080

80,8	6 22 19,75	1,5							
			1,45	699	697	86152,79	3,445	4,547	86160,782
80,7	6 33 58,75	1,4							
			1,3375	702,5	700,5	86154,02	2,931	4,547	86161,498
80,8	6 45 41,25	1,275							
			1,2375	700,75	698,75	86153,41	2,607	4,611	86160,628
81	6 57 22	1,2							
			1,15	702,5	700,5	86154,02	2,167	4,695	86160,882
81,2	7 9 4,5	1,1							
80,9						Mean.....			86160,9475
						Rate of the Clock.....			— 1,34
						Vibrations in 24 hours..			86159,607

Hygrometer 25,15 *dry.* Barometer 30,126

82,7	8 35 2,5	1,375							
			1,3125	701,25	699,25	86153,58	2,823	5,393	86161,796
82,8	8 46 43,75	1,25							
			1,20	701,12	699,12	86153,53	2,359	5,414	86161,303
82,8	8 58 24,87	1,15							
			1,1125	704,38	702,38	86154,68	2,028	5,457	86162,165
83	9 10 9,25	1,075							
			1,0375	704,5	702,5	86154,72	1,764	5,499	86161,983
83	9 21 53,75	1,00							
82,86						Mean.....			86161,81175
						Rate of the Clock.....			— 1,34
						Vibrations in 24 hours..			86160,472

Hygrometer 30,2 *dry.* Barometer 30,125

84,0	10 42 57,5	1,4							
			1,35	700,25	698,25	86153,23	2,986	5,985	86162,201
84,3	10 54 37,75	1,3							
			1,25	698	696	86152,44	2,560	6,366	86161,366
85,8	11 6 15,75	1,2							
			1,15	699,75	697,75	86153,05	2,167	6,979	86162,196
87,2	11 17 55,5	1,1							
			1,05	700	698	86153,14	1,806	7,614	86162,569
88,8	11 29 35,5	1,0							
86,02						Mean.....			86162,08075
						Rate of the Clock.....			— 1,34
						Vibrations in 24 hours..			86160,741

24th February A. M.

Hygrometer 51,75 dry. — *Inches.* Barometer 30,085

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
93,0	12 52 11,75	1,325							
			1,2625	687	685	86148,47	2,612	9,771	86160,853
93,2	1 3 38,75	1,2							
			1,1625	685,75	683,75	86148,01	2,214	10,025	86160,249
94,2	1 15 4,5	1,125							
			1,0875	683,25	681,25	86147,09	1,938	10,469	86159,497
95,3	1 26 27,75	1,05							
			1,0125	681,75	679,75	86146,53	1,680	11,231	86159,441
97,8	1 37 49,5	0,975							
94,7						Mean.....			86160,010
						Rate of the Clock.....			— 1,34
						Vibrations in 24 hours..			86158,67

Hygrometer 60,5 dry. — Barometer 30,050

97,2	2 43 17,5	1,375							
			1,325	677,75	675,75	86145,04	2,876	11,569	86159,485
97,5	2 54 35,25	1,275							
			1,2375	678,5	676,5	86145,32	2,607	11,675	86159,602
97,7	3 5 53,75	1,2							
			1,15	680	678	86145,89	2,167	11,442	86159,499
96,4	3 17 13,75	1,1							
			1,0625	682	680	86146,63	1,850	11,040	86159,520
95,8	3 28 35,75	1,025							
96,92						Mean.....			86159,5265
						Rate of the Clock....			— 1,34
						Vibrations in 24 hours..			86158,186

25th February A. M.

Rate of the Clock —0,73 — *Hygrometer 1,15 moist.* — Barometer 30,098

79	8 22 3,5	1,425							
			1,3875	702	700	86153,85	3,095	3,892	86160,837
79,4	8 33 45,5	1,35							
			1,30	705,75	703,75	86155,15	2,769	3,934	86161,853
79,2	8 45 31,25	1,25							
			1,20	701,5	699,5	86153,67	2,359	3,849	86159,878
79	8 57 12,75	1,15							
			1,10	707	705	86155,59	1,982	3,807	86161,379
79	9 8 59,75	1,05							
79,12						Mean.....			86160,98675
						Rate of the Clock.....			— 0,73
						Vibrations in 24 hours..			86160,257

Hygrometer 0,6 dry. — Barometer 30,112

79,8	10 18 24	1,45							
			1,40	709,25	707,25	86156,36	3,211	4,251	86163,822
80,3	10 30 13,25	1,35							
			1,30	696,75	694,75	86151,99	2,769	4,541	86159,309
80,7	10 41 50	1,25							
			1,2125	704,75	702,75	86154,81	2,409	4,547	86161,766
80,8	10 53 34,75	1,175							
			1,125	704,75	702,75	86154,81	2,074	4,653	86161,539
81,2	11 5 19,5	1,075							
80,56						Mean.....			86161,6085
						Rate of the Clock.....			— 0,73
						Vibrations in 24 hours..			86160,878

25th February A. M.

Hygrometer 18,8 *dry.* — Barometer 30,078 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
83,8	12 17 5,37	1,3	1,25	697,38	695,38	86152,21	2,560	5,985	86160,755
84,5	12 28 42,75	1,2	1,1625	697,5	695,5	86152,25	2,214	6,176	86160,640
84,7	12 40 20,25	1,125	1,0875	696,37	694,37	86151,86	1,938	6,281	86160,079
85	12 51 56,62	1,05	1,0125	697,75	695,75	86152,35	1,680	6,451	86160,481
85½	1 3 34,37	0,975							
84,7						Mean			86160,48875
						Rate of the Clock			— 0,73
						Vibrations in 24 hours			86159,759

Hygrometer 35,95 *dry.* — Barometer 30,045

89,8	2 21 11,25	1,4	1,35	688,75	686,75	86149,11	2,986	8,248	86160,344
89,2	2 32 40	1,3	1,25	687,5	685,5	86148,65	2,560	8,270	86159,480
89,9	2 44 7,5	1,2	1,1625	688,5	686,5	86149,02	2,214	8,396	86159,630
89,8	2 55 36	1,125	1,0875	689	687	86149,20	1,938	8,375	86159,513
89,8	3 7 5	1,05							
89,7						Mean			86159,74175
						Rate of the Clock			— 0,73
						Vibrations in 24 hours			86159,012

Hygrometer 41,25 *dry.* — Barometer 30,041

89,6	4 14 47,5	1,4	1,35	687,25	685,25	86148,56	2,986	8,164	86159,710
89	4 26 14,75	1,3	1,25	689,75	687,75	86149,47	2,560	7,952	86159,982
88,8	4 37 44,5	1,2	1,1625	690,75	688,75	86149,84	2,214	7,656	86159,710
87,4	4 49 15,25	1,125	1,0875	692,55	690,55	86150,49	1,938	6,979	86159,407
85,6	5 00 47,75	1,05							
88,08						Mean			86159,69975
						Rate of the Clock			— 0,73
						Vibrations in 24 hours			86158,97

26th February A. M. "
Rate of the Clock —0,75 — Hygrometer 8,7 *dry.* — Barometer 30,023

80,8	6 31 45,5	1,25	1,2125	705	703	86154,89	2,409	4,568	86161,867
80,8	6 43 30,5	1,175	1,1375	701	699	86153,49	2,120	4,505	86160,115
80,5	6 55 11,5	1,1	1,05	704	702	86154,55	1,806	4,484	86160,840
80,7	7 6 55,5	1,0	0,975	706,25	704,25	86155,33	1,557	4,547	86161,434
80,8	7 18 41,75	0,95							
80,72						Mean			86161,064
						Rate of the Clock			— 0,75
						Vibrations in 24 hours			86160,314

26th February A. M.

Hygrometer 13,35 *dry.* Barometer *Inches.* 30,048

Temperature.	Time of Coincidence. h. ' "	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc. +	Correction for Temperature. +	Vibrations in 24 hours.
82,5	8 35 26,5	1,4							
			1,3375	699	697	86152,79	2,931	5,351	86161,072
82,8	8 47 5,5	1,275							
			1,2375	699,25	697,25	86152,88	2,607	5,444	86160,931
82,8	8 58 44,75	1,2							
			1,15	702,75	700,75	86154,11	2,167	5,444	86161,721
82,8	9 10 27,5	1,1							
			1,05	704,25	702,25	86154,63	1,806	5,371	86161,807
82,6	9 22 11,75	1							
82,7						Mean.....			86161,38275
						Rate of the Clock.....			— 0,75
						Vibrations in 24 hours..			86160,633

Hygrometer 21,85 *dry.* Barometer 30,053

83,7	10 49 37,5	1,375							
			1,325	697	695	86152,08	2,876	5,901	86160,857
84,2	11 1 14,5	1,275							
			1,225	697,5	695,5	86152,25	2,459	6,176	86160,885
85	11 12 52	1,175							
			1,1375	694,62	692,62	86151,23	2,120	6,556	86159,906
86	11 24 26,62	1,1							
			1,0625	695,88	693,88	86151,68	1,850	6,979	86160,509
87	11 36 2,5	1,025							
85,18						Mean.....			86160,53925
						Rate of the Clock.....			— 0,75
						Vibrations in 24 hours..			86159,789

Hygrometer 49,2 *dry.* Barometer 30,041

90	12 44 13,62	1,3							
			1,2625	684,88	682,88	86147,69	2,612	8,883	86159,185
92	12 55 38,5	1,225							
			1,175	685	683	86147,74	2,262	9,517	86159,519
93	1 7 3,5	1,125							
			1,0875	685,12	683,12	86147,78	1,938	9,983	86159,701
94,2	1 18 28,62	1,05							
			1,0125	683,38	681,38	86146,03	1,680	10,363	86158,073
94,8	1 29 52	0,975							
92,8						Mean.....			86159,1195
						Rate of the Clock.....			— 0,75
						Vibrations in 24 hours...			86158,369

Hygrometer 58,25 *dry.* Barometer 30,013

95,8	2 38 30,75	1,275							
			1,2375	679,5	677,5	86145,69	2,607	10,744	86159,041
95	2 49 50,25	1,2							
			1,15	680	678	86145,88	2,167	10,617	86158,664
95,2	3 1 10,25	1,1							
			1,0625	681	679	86146,25	1,850	10,511	86158,611
94,5	3 12 31,25	1,025							
			1,000	683,25	681,25	86147,09	1,638	10,385	86159,113
94,6	3 23 54,5	0,975							
95,02						Mean.....			86158,85725
						Rate of the Clock.....			— 0,75
						Vibrations in 24 hours..			86158,107

For the LENGTH of the PENDULUM.

THIRD SET. (R.)

1823. 1st *March A. M.*

Rate of the Clock — 0,15 — Hygrometer 3,35 *moist.* — *Inches.* Barometer 30,032

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
79,2	6 55 32,5	1,375	1,325	704	702	86154,55	2,876	3,955	86161,381
79,5	7 7 16,5	1,275	1,225	706,5	704,5	86155,41	2,459	4,061	86161,930
79,7	7 19 3	1,175	1,125	705,25	703,25	86154,98	2,074	4,124	86161,178
79,8	7 30 48,25	1,075	1,025	707,5	705,5	86155,76	1,689	4,230	86161,679
80,2.	7 42 35,75	0,975							
79,68						Mean.....			86161,542
						Rate of the Clock.....			— 0,15
						Vibrations in 24 hours..			86161,392

Hygrometer 0,45 *dry.* — Barometer 30,055

80,8	8 55 49,5	1,425	1,375	701	699	86153,49	3,098	4,568	86161,156
80,8	9 7 30,5	1,325	1,275	699,75	697,75	86153,05	2,663	4,568	86160,281
80,8	9 19 10,25	1,225	1,175	703,62	701,62	86154,41	2,262	4,611	86161,283
81	9 30 53,87	1,125	1,0875	702,88	700,88	86154,15	1,938	4,748	86160,836
81¼	9 42 36,75	1,05							
80,93						Mean.....			86160,889
						Rate of the Clock.....			— 0,15
						Vibrations in 24 hours..			86160,739

Hygrometer 11,8 *dry.* — Barometer 30,062

82,2	10 48 24,25	1,55	1,50	695,5	693,5	86151,54	3,687	5,287	86160,514
82,8	10 59 59,75	1,45	1,3875	695,5	693,5	86151,54	3,095	5,626	86160,261
83,8	11 11 35,25	1,325	1,2875	696,5	694,5	86151,9	2,716	6,049	86160,665
84,8	11 23 11,75	1,25	1,20	695	693	86151,37	2,359	6,430	86160,159
85,6	11 34 46,75	1,15							
83,84						Mean.....			86160,39975
						Rate of the Clock.....			— 0,15
						Vibrations in 24 hours..			86160,25

Hygrometer 46,5 *dry.* — Barometer 30,035

92,5	12 55 28,25	1,425	1,375	684,12	682,12	86147,41	3,098	9,623	86160,131
93	1 6 52,37	1,325	1,275	683,13	681,13	86147,05	2,663	9,835	86159,548
93,5	1 18 15,5	1,225	1,1875	684	682	86147,37	2,310	10,046	86159,726
94	1 29 39,5	1,15	1,1125	684	682	86147,37	2,028	10,194	86160,592
94,2	1 41 3,5	1,075							
93,44						Mean.....			86159,99925
						Rate of the Clock.....			— 0,15
						Vibrations in 24 hours..			86159,849

1st March A. M.

Hygrometer 53,9 *dry*. Barometer 30,009 *Inches.*

Temperature.	Time of Coincidence. h. ' "	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc. +	Correction for Temperature. +	Vibrations in 24 hours.
93	2 49 18,25	1,525							
			1,475	677,5	675,5	86144,94	3,565	10,304	86158,809
94,3	3 00 35,75	1,425							
			1,3625	681	679	86146,25	3,042	10,279	86159,571
94,3	3 11 56,75	1,3							
			1,25	681,25	679,25	86146,35	2,560	10,385	86159,295
94,8	3 23 18	1,2							
			1,1625	681,37	679,37	86146,39	2,214	10,448	86159,052
94,6	3 34 39,37	1,125							
94,2						Mean.....			86159,18175
						Rate of the Clock.....			—0,15
						Vibrations in 24 hours..			86159,032

3d March A. M;
Rate of the Clock +0,55 Hygrometer 28,6 *moist*. Barometer 30,075

76,4	8 17 18	1,375							
			1,3375	703,25	701,25	86154,28	2,931	2,771	86159,982
76,7	8 29 1,25	1,3							
			1,25	701,5	699,5	86153,67	2,560	2,940	86159,170
77,2	8 40 42,75	1,2							
			1,15	705	703	86154,89	2,167	3,172	86160,229
77,8	8 52 27,75	1,1							
			1,0825	703,75	701,75	86154,46	1,850	3,400	86159,710
78,2	9 4 11,5	1,025							
77,26						Mean.....			86159,77275
						Rate of the Clock.....			+ 0,55
						Vibrations in 24 hours..			86160,323

Hygrometer 8,8 *moist*. Barometer 30,090

80,5	10 50 17,5	1,375							
			1,325	698,37	696,37	86152,57	2,876	4,660	86160,046
81,25	11 1 55,87	1,275							
			1,225	700,38	698,38	86153,28	2,459	4,960	86160,699
82,2	11 13 36,25	1,175							
			1,125	699,25	697,25	86152,88	2,074	5,372	86160,326
83,2	11 25 15,5	1,075							
			1,0375	697,87	695,87	86152,39	1,764	5,753	86159,907
84	11 36 53,37	1							
82,23						Mean.....			86160,2445
						Rate of the Clock.....			+ 0,55
						Vibrations in 24 hours..			86160,794

Hygrometer 20,45 *dry*. Barometer 30,051

85,2	12 53 43,5	1,475							
			1,4125	692,12	690,12	86150,33	3,269	6,576	86160,175
85,8	1 5 15,62	1,35							
			1,30	693,13	691,13	86150,7	2,769	6,683	86160,152
85,8	1 16 48,75	1,25							
			1,2125	696,75	694,75	86151,99	2,409	6,578	86160,977
85,3	1 28 25,5	1,175							
			1,125	696	694	86151,72	2,074	6,398	86160,192
85	1 40 1,5	1,075							
85,42						Mean.....			86160,374
						Rate of the Clock.....			+ 0,55
						Vibrations in 24 hours..			86160,924

3d March A. M.

Inches.

Hygrometer 35,5 dry. Barometer 30,018

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
88,6	3 1 47,5	1,45							
			1,40	687	685	86148,47	3,211	7,952	86159,633
89	3 13 14,5	1,35							
			1,30	689,5	687,5	86149,38	2,769	8,206	86160,355
89,8	3 24 44	1,25							
			1,2125	689,75	687,75	86149,47	2,409	8,418	86160,297
90	3 36 13,75	1,175							
			1,1375	689,25	687,25	86149,29	2,120	8,418	86159,828
89,8	3 47 43	1,1							
89,44						Mean.....			86160,02825
						Rate of the Clock.....			+ 0,55
						Vibrations in 24 hours..			86160,578

Hygrometer 37,25 dry. Barometer 30,112

86,4	5 7 42,75	1,35							
			1,2875	689,87	687,87	86149,52	2,716	7,022	86159,258
86,8	5 19 12,62	1,225							
			1,20	692,5	690,5	86150,47	2,359	6,895	86159,724
85,8	5 30 45,12	1,175							
			1,1375	693,63	691,63	86150,88	2,120	6,599	86159,599
85,4	5 42 18,75	1,1							
			1,0625	697,25	695,25	86152,17	1,850	6,387	86160,407
84,8	5 53 56	1,025							
85,84						Mean.....			86159,747
						Rate of the Clock....			+ 0,55
						Vibrations in 24 hours..			86160,297

4th March A. M.

Rate of the Clock —0,25 *Hygrometer 23 moist.* Barometer 30,041

77,4	7 13 13,75	1,4							
			1,35	707,75	705,75	86155,85	2,986	3,194	86162,030
77,7	7 25 1,5	1,3							
			1,25	708,5	706,5	86156,1	2,560	3,194	86161,854
77,4	7 36 50	1,2							
			1,15	711,62	709,62	86157,17	2,167	3,130	86162,467
77,4	7 48 41,62	1,1							
			1,075	711,13	709,13	86157,01	1,893	3,194	86162,097
77,7	8 00 32,75	1,05							
77,52						Mean.....			86162,112
						Rate of the Clock.....			— 0,25
						Vibrations in 24 hours..			86161,862

Hygrometer 28,55 moist. Barometer 30,057

78	8 15 9,5	1,375							
			1,325	706,25	704,25	86155,33	2,876	3,426	86161,632
78,2	8 26 55,75	1,275							
			1,225	708,87	706,87	86156,23	2,459	3,453	86162,142
78,6	8 38 44,62	1,175							
			1,1375	709,88	707,88	86156,58	2,120	3,786	86162,486
79,3	8 50 34,5	1,1							
			1,05	710	708,0	86156,62	1,806	4,040	86162,466
79,8	9 2 24,5	1							
78,78						Mean.....			86162,1815
						Rate of the Clock.....			— 0,25
						Vibrations in 24 hours..			86161,931

4th March A. M.

Hygrometer 27,75 *moist.* — Barometer 30,078 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
82,8	10 55 30,37	1,375							
			1,3125	699,88	697;88	86153,1	2,823	5,626	86161,549
83,8	11 7 10,25	1,25							
			1,2125	699,25	697,25	86152,88	2,409	5,964	86160,980
84,4	11 18 49,5	1,175							
			1,1375	699	697	86152,79	2,120	6,070	86160,980
84,3	11 30 28,5	1,1							
			1,0625	700	698	86153,14	1,850	6,155	86161,145
84,8	11 42 8,5	1,025							
84,02								Mean.....	86161,23175
								Rate of the Clock.....	+ 0,25
								Vibrations in 24 hours...	86161,482

Hygrometer 1,1 *dry.* — Barometer 30,033

85,6	2 4 39,12	1,4							
			1,35	693,25	691,25	86150,74	2,986	6,599	86160,325
85,6	2 16 12,37	1,3							
			1,25	694,13	692,13	86151,05	2,560	6,683	86160,293
86	2 27 46,5	1,2							
			1,1625	696	694	86151,72	2,214	6,726	86160,660
85,8	2 39 22,5	1,125							
			1,0875	694,5	692,5	86151,19	1,938	6,578	86159,706
85,3	2 50 57	1,05							
85,66								Mean.....	86160,246
								Rate of the Clock.....	+ 0,25
								Vibrations in 24 hours..	86160,496

Hygrometer 4,05 *dry.* — Barometer 30,011

82,2	4 18 26,75	1,4							
			1,35	697,62	695,62	86152,3	2,986	5,118	86160,404
82	4 30 4,37	1,3							
			1,2625	696,88	694,88	86152,04	2,612	5,034	86159,686
81,8	4 41 41,25	1,225							
			1,1875	702	700	86153,85	2,310	4,991	86161,151
81,8	4 53 23,25	1,15							
			1,1125	700,25	698,25	86153,23	2,028	5,034	86160,292
82,0	5 5 3,5	1,075							
81,96								Mean.....	86160,38325
								Rate of the Clock.....	+ 0,25
								Vibrations in 24 hours..	86160,633

9th March A. M.
Rate of the Clock —0,57 — Hygrometer 2,3 *moist.* — Barometer 30,135

79,7	6 46 24	1,475							
			1,425	699,5	697,5	86152,97	3,327	4,166	86160,463
80	6 58 3,5	1,375							
			1,325	702,75	700,75	86154,11	2,876	4,230	86161,216
80	7 9 46,25	1,275							
			1,225	703,5	701,5	86154,37	2,459	4,272	86161,101
80,2	7 21 29,75	1,175							
			1,125	705,75	703,75	86155,15	2,074	4,336	86161,560
80,3	7 33 15,5	1,075							
80,04								Mean.....	86161,085
								Rate of the Clock.....	— 0,57
								Vibrations in 24 hours..	86160,515

9th March A. M.

Hygrometer 6,2 *dry.* — Barometer 30,156 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
81,8	8 52 40	1,325							
			1,275	703,5	701,5	86154,37	2,663	4,991	86162,024
81,8	9 4 23,5	1,225							
			1,175	705	703	86154,89	2,262	4,991	86162,143
81,8	9 16 8,5	1,125							
			1,0875	706,62	704,62	86155,46	1,938	4,991	86162,389
81,8	9 27 55,12	1,05							
			1,00	708,38	706,38	86156,2	1,638	4,991	86162,829
81,8	9 39 43,5	0,95							
81,8						Mean.....			86162,34625
						Rate of the Clock.....			— 0,57
						Vibrations in 24 hours..			86161,776

Hygrometer 15,1 *dry.* — Barometer 30,143

83	10 55 16,5	1,4							
			1,3375	703	701	86154,2	2,931	5,499	86162,630
83	11 6 59,5	1,275							
			1,225	704	702	86154,55	2,459	5,457	86162,466
82,8	11 18 43,5	1,175							
			1,1375	704	702	86154,55	2,120	5,330	86162,000
82,4	11 30 27,5	1,1							
			1,0625	706	704	86155,24	1,850	5,245	86162,335
82,4	11 42 13,5	1,025							
82,72						Mean.....			86162,35775
						Rate of the Clock.....			— 0,57
						Vibrations in 24 hours..			86161,788

Hygrometer 17,15 *dry.* — Barometer 30,082

82,2	12 59 44,5	1,375							
			1,325	700,25	698,25	86153,23	2,876	5,287	86161,393
82,8	1 11 24,75	1,275							
			1,225	701,25	699,25	86153,58	2,459	5,499	86161,538
83,2	1 23 6	1,175							
			1,125	701,5	699,5	86153,67	2,074	5,743	86161,487
84	1 34 47,5	1,075							
			1,0375	703,62	701,62	86154,41	1,764	6,049	86162,223
84,6	1 46 31,12	1							
83,36						Mean.....			86161,66025
						Rate of the Clock.....			— 0,57
						Vibrations in 24 hours..			86161,090

Hygrometer 21,85 *dry.* — Barometer 30,080

85	2 56 19,62	1,325							
			1,275	697,38	695,38	86152,21	2,663	6,556	86161,429
85,2	3 7 57	1,225							
			1,1875	698,5	696,5	86152,6	2,310	6,556	86161,466
85	3 19 35,5	1,15							
			1,10	699	697	86152,79	1,982	6,303	86161,075
84,8	3 31 14,5	1,05							
			1,025	702	700	86153,85	1,689	6,133	86161,672
84,2	3 42 56,5	1							
84,84						Mean.....			86161,4105
						Rate of the Clock.....			— 0,57
						Vibrations in 24 hours..			86160,840

10th March A. M.

Rate of the Clock — 0,64 Hygrometer 5,65 *dry.* Barometer 30,125 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
81,4	7 24 7	1,5							
			1,45	698,5	696,5	86152,6	3,445	4,886	86160,931
81,7	7 35 45,5	1,4							
			1,35	694,39	692,39	86151,15	2,986	5,012	86159,148
82	7 47 19,87	1,3							
			1,25	707,38	705,38	86155,72	2,560	5,076	86163,356
82	7 59 7,25	1,2							
			1,1625	700,25	698,25	86153,23	2,214	5,076	86160,520
82	8 10 47,5	1,125							
81,82						Mean			86162,48875
						Rate of the Clock			— 0,64
						Vibrations in 24 hours			86161,849

Hygrometer 1,45 *moist.* Barometer 30,147

81,8	8 33 10,5	1,4							
			1,3375	702,25	700,25	86153,93	2,931	4,970	86161,831
81,7	8 44 52,75	1,275							
			1,225	706	704	86155,24	2,459	4,949	86162,648
81,7	8 56 38,75	1,175							
			1,100	706,25	704,25	86155,33	1,982	4,949	86162,261
81,7	9 8 25	1,025							
			0,9875	708,5	706,5	86156,1	1,598	4,886	86162,584
81,4	9 20 13,5	0,95							
81,66						Mean			86162,331
						Rate of the Clock			— 0,64
						Vibrations in 24 hours			86161,691

Hygrometer 16,35 *dry.* Barometer 30,140

84,3	12 1 26,75	1,375							
			1,300	702,5	700,5	86154,02	2,769	6,260	86163,049
85,3	12 13 9,25	1,225							
			1,175	700,25	698,25	86153,23	2,262	6,576	86162,068
85,7	12 24 49,5	1,125							
			1,075	701,5	699,5	86153,67	1,964	6,874	86162,508
86,8	12 36 31	1,025							
			1,000	699,5	697,5	86152,97	1,638	7,360	86161,968
88	12 48 10,5	0,975							
86,02						Mean			86162,39825
						Rate of the Clock			— 0,64
						Vibrations in 24 hours			86161,758

Hygrometer 37,4 *dry.* Barometer 30,085

87	2 15 52,25	1,4							
			1,35	696,25	694,25	86151,81	2,986	7,339	86162,135
87,7	2 27 28,5	1,3							
			1,25	694,75	692,75	86151,28	2,560	7,973	86161,813
89,0	2 39 3,25	1,2							
			1,15	694,5	692,5	86151,05	2,167	8,248	86161,465
90	2 50 37,75	1,1							
			1,0625	694,5	692,5	86151,05	1,850	8,460	86161,360
90	3 2 12,25	1,025							
88,74						Mean			86161,69325
						Rate of the Clock			— 0,64
						Vibrations in 24 hours			86161,053

10*th March* A. M.

Hygrometer 40,95 *dry.* Barometer 30,073 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
87,8	4 15 15,5	1,475							
			1,425	691	689	86149,93	3,327	7,402	86160 659
87,2	4 26 46,5	1,375							
			1,3375	695,87	693,87	86151,68	2,931	7,064	86161,675
86,2	4 38 22,37	1,3							
			1,25	694,75	692,75	86151,28	2,560	6,726	86160,566
85,7	4 49 57,12	1,2							
			1,15	697,38	695,38	86152,21	2,167	6,535	86160,912
85,2	5 1 34,5	1,1							
86,42						Mean.....			86160,953
						Rate of the Clock.....			— 0,64
						Vibrations in 24 hours..			86160,313

12*th March* A. M.

Rate of the Clock + 0,20 Hygrometer 14,35 *moist.* Barometer 30,102

81	7 35 9,25	1,3							
			1,25	701	699	86153,49	2,560	4,695	86160,745
81,2	7 46 50,25	1,2							
			1,16	703,75	701,75	86154,46	2,205	4,780	86161,445
81,4	7 58 34	1,12							
			1,0725	705,5	703,5	86155,07	1,885	4,886	86161,841
81,7	8 10 19,5	1,025							
			1,0025	704,25	702,25	86154,63	1,647	4,970	86161,247
81,8	8 22 3,75	0,98							
81,42						Mean.....			86161,3195
						Rate of the Clock.....			+ 0,20
						Vibrations in 24 hours..			86161,519

Hygrometer 12,65 *moist.* Barometer 30,108

81,8	9 36 11,12	1,4							
			1,35	701,13	699,13	86153,54	2,986	4,991	86161,517
81,8	9 47 52,25	1,3							
			1,25	702,75	700,75	86154,11	2,560	4,991	86161,661
81,8	9 59 35	1,2							
			1,15	703	701,0	86154,2	2,167	4,991	86161,358
81,8	10 11 18	1,1							
			1,0625	706,25	704,25	86155,33	1,850	4,991	86162,171
81,8	10 23 4,25	1,025							
81,8						Mean.....			86161,67675
						Rate of the Clock.....			+ 0,20
						Vibrations in 24 hours..			86161,877

Hygrometer 3,75 *dry.* Barometer 30,105

84,4	11 33 25	1,45							
			1,3875	698	696	86152,44	3,095	5,837	86161,372
83,2	11 45 3	1,325							
			1,2875	698,5	696,5	86152,6	2,716	5,393	86160,709
82,3	11 56 41,5	1,25							
			1,2125	701	699	86153,49	2,409	6,097	86161,996
81,8	12 8 22,5	1,175							
			1,1375	701,12	699,12	86153,54	2,120	4,991	86160,651
81,8	12 20 3,62	1,1							
82,7						Mean.....			86161,182
						Rate of the Clock.....			+ 0,20
						Vibrations in 24 hours..			86161,382

12*th March A. M.*

Hygrometer 0,90 *dry.* — Barometer 30,088 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
82,5	12 33 49,25	1,375							
			1,325	704	702	86154,55	2,876	5,562	86162,988
83,8	12 45 33,25	1,275							
			1,225	699,37	697,37	86152,92	2,459	5,880	86161,259
84	12 57 12,62	1,175							
			1,125	699,88	697,88	86153,1	2,074	5,795	86160,969
83,4	1 8 52,5	1,075							
			1,0375	701,75	699,75	86153,76	1,764	5,626	86161,150
83,2	1 20 34,5	1							
83,38						Mean.....			86161,5915
						Rate of the Clock.....			+ 0,20
						Vibrations in 24 hours..			86161,791

Hygrometer 7,75 *dry.* — Barometer 30,048

86	3 35 43,75	1,4							
			1,35	693,75	691,75	86150,92	2,986	6,726	86160,632
85,8	3 47 17,5	1,3							
			1,25	696	694	86151,72	2,560	6,768	86161,048
86,2	3 58 53,5	1,2							
			1,1625	695,75	693,75	86151,63	2,214	6,853	86160,697
86,2	4 10 29,25	1,125							
			1,0875	697,25	695,25	86152,17	1,938	6,853	86160,961
86,2	4 22 6,5	1,05							
86,08						Mean.....			86160,8345
						Rate of the Clock....			+ 0,20
						Vibrations in 24 hours..			86161,034

Hygrometer 8,8 *dry.* — Barometer 30,050

86,0	4 27 25,5	1,475							
			1,425	695	693	86151,37	3,327	6,768	86161,465
86	4 39 00,5	1,375							
			1,325	694	692	86151,01	2,876	6,768	86160,654
86	4 50 34,5	1,275							
			1,2375	695,75	693,75	86151,63	2,607	6,556	86160,793
85	5 2 10,25	1,2							
			1,15	699,35	697,35	86152,91	2,167	6,176	86161,253
84,2	5 13 49,5	1,1							
85,44						Mean.....			86161,04125
						Rate of the Clock.....			+ 0,20
						Vibrations in 24 hours..			86161,241

For the LENGTH of the PENDULUM.

Fourth Set. (R.)

1823. 13*th March* A. M.

Rate of the Clock + 0,15 — Hygrometer 24,12 *moist.* — Barometer 30,081 *Inches.*

Temperature.	Time of Coincidence. h. ' "	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc. +	Correction for Temperature. +	Vibrations. in 24 hours.
79,2	6 33 32	1,45							
			1,3875	699,5	697,5	86152,97	3,095	3,955	86160,020
79,5	6 45 11,5	1,325							
			1,275	702,5	700,5	86154,02	2,663	4,040	86160,723
79,6	6 56 54	1,225							
			1,1875	703,5	701,5	86154,37	2,310	4,103	86160,783
79,8	7 8 37,5	1,15							
			1,1125	702,75	700,75	86154,11	2,028	4,145	86160,283
79,8	7 20 20,25	1,075							
79,58						Mean.....			86160,452
						Rate of the Clock.....			+ 0,15
						Vibrations in 24 hours..			86160,602

Hygrometer 22,35 *moist.* — Barometer 30,126

81,2	8 49 58,5	1,45							
			1,3875	700,25	698,25	86153,23	3,095	4,780	86161,105
81,4	9 1 38,75	1,325							
			1,275	701	699	86153,49	2,663	4,886	86161,039
81,7	9 13 19,75	1,225							
			1,175	702,37	700,37	86153,98	2,262	4,970	86161,212
81,8	9 25 2,12	1,125							
			1,100	704,13	702,13	86154,59	1,982	5,076	86161,648
82,2	9 36 46,25	1,075							
81,66						Mean.....			86161,251
						Rate of the Clock.....			+ 0,15
						Vibrations in 24 hours..			86161,401

Hygrometer 5,3 *moist.* — Barometer 30,124

85	10 53 48,75	1,425							
			1,375	695,75	693,75	86151,63	3,098	6,430	86161,158
85,4	11 5 24,5	1,325							
			1,275	696,75	694,75	86151,99	2,663	6,810	86161,463
86,8	11 17 1,25	1,225							
			1,175	696,12	694,12	86151,77	2,262	7,402	86161,434
88,2	11 28 37,37	1,125							
			1,0875	694,38	692,38	86151,14	1,938	7,952	86161,030
89,4	11 40 11,75	1,05							
86,96						Mean.....			86161,271
						Rate of the Clock.....			+ 0,15
						Vibrations in 24 hours..			86161,421

Hygrometer 37,9 *dry.* — Barometer 30,101

93,3	12 53 42	1,45							
			1,40	683	681	86147	3,211	10,004	86160,215
94	1 5 5	1,35							
			1,30	684,12	682	86147,37	2,769	10,279	86160,418
94,6	1 16 29,12	1,25							
			1,20	682,5	680,5	86146,78	2,359	10,533	86159,672
95,2	1 27 51,62	1,15							
			1,1125	682,63	680,63	86146,86	2,028	10,617	86159,505
95	1 39 14,25	1,075							
94,42						Mean.....			86159,952
						Rate of the Clock.....			+ 0,15
						Vibrations in 24 hours..			86160,102

13th March A. M.

Hygrometer 48,05 *dry.* Barometer 30,078 *Inches.*

Temperature.	Time of Coincidence. h. ' "	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc. +	Correction for Temperature. +	Vibrations in 24 hours.
94,5	2 48 43,25	1,45							
			1,40	680,25	678,25	86145,98	3,211	10,321	86159,512
94,3	3 00 3,5	1,35							
			1,3125	682,12	680,12	86146,67	2,823	10,258	86159,751
94,2	3 11 25,62	1,275							
			1,225	683,88	681,88	86147,32	2,459	10,279	86160,058
94,4	3 22 49,5	1,175							
			1,1375	684,25	682,25	86147,46	2,120	10,406	86159,986
94,8	3 34 13,75	1,1							
94,4						Mean			86159,827
						Rate of the Clock			+ 0,15
						Vibrations in 24 hours			86159,977

14th March A. M.

Rate of the Clock + 0,34 Hygrometer 4,9 *moist.* Barometer 30,093

82	7 21 5	1,4							
			1,35	700,5	698,5	86153,32	2,986	5,034	86161,340
81,8	7 32 45,5	1,3							
			1,25	702,5	700,5	86154,02	2,560	4,991	86161,571
81,8	7 44 28	1,2							
			1,15	703,62	701,62	86154,41	2,167	5,034	86161,611
82	7 56 11,62	1,1							
			1,0625	703,13	701,13	86154,24	1,850	5,076	86161,166
82	8 7 54,75	1,025							
81,92						Mean			86161,422
						Rate of the Clock			+ 0,34
						Vibrations in 24 hours			86161,762

Hygrometer 6,85 *moist.* Barometer 30,117

81,8	8 27 31,12	1,425							
			1,375	699,63	697,63	86151,51	3,098	5,097	86159,705
82,3	8 39 10,75	1,325							
			1,275	702,75	700,75	86154,11	2,663	5,245	86162,016
82,5	8 50 53,5	1,225							
			1,1875	703,75	701,75	86154,46	2,310	5,266	86162,036
82,4	9 2 37,25	1,15							
			1,10	703,37	701,37	86154,33	1,982	5,245	86161,557
82,4	9 14 20,62	1,05							
82,28						Mean			86161,3285
						Rate of the Clock			+ 0,34
						Vibrations in 24 hours			86161,668

Hygrometer 25 *dry.* Barometer 30,118

90,9	11 30 40,5	1,275							
			1,225	692,12	690,12	86150,33	2,459	9,137	86161,926
92,3	11 42 12,62	1,175							
			1,125	690,63	688,63	86149,79	2,074	9,708	86161,572
93,6	11 53 43,25	1,075							
			1,0375	691	689,0	86149,93	1,764	9,687	86161,381
92,2	12 5 14,25	1,00							
			0,9625	692,5	690,5	86150,47	1,518	8,862	86160,850
89,7	12 16 46,75	0,925							
91,74						Mean			86161,43225
						Rate of the Clock			+ 0,34
						Vibrations in 24 hours			86161,772

14th March A. M.

Hygrometer 33,6 *dry.* Barometer 30,093 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
91,3	12 30 4,5	1,325							
			1,275	689,5	687,5	86149,38	2,663	9,433	86161,476
93,3	12 41 34	1,225							
			1,175	687,75	685,75	86148,74	2,262	10,173	86161,175
94,8	12 53 1,75	1,125							
			1,0875	686,25	684,25	86148,05	1,938	10,581	86160,569
95,7	1 4 28	1,05							
			1,0125	686,75	684,75	86148,38	1,680	10,892	86160,952
95,8	1 15 54,75	0,975							
94,18						Mean			86161,043
						Rate of the Clock			+ 0,34
						Vibrations in 24 hours			86161,383

Hygrometer 47,85 *dry.* Barometer 30,050

94,8	4 2 2,5	1,4							
			1,35	683,75	681,75	86147,27	2,986	10,385	86160,641
94,3	4 13 26,25	1,3							
			1,25	684,75	682,75	86148,9	2,560	10,215	86161,675
94	4 24 51	1,2							
			1,1625	687,5	685,5	86148,65	2,214	10,131	86160,995
93,9	4 36 18,5	1,125							
			1,100	686,25	684,25	86148,05	1,982	9,983	86160,015
93,3	4 47 44,75	1,075							
94,06						Mean			86160,8315
						Rate of the Clock			+ 0,34
						Vibrations in 24 hours			86161,171

16th March A. M.

Rate of the Clock —0,30 Hygrometer 34,75 *moist.* Barometer 30,147

77,6	8 16 12,5	1,4							
			1,35	706,5	704,5	86155,41	2,986	3,299	86161,695
78	8 27 59	1,3							
			1,25	709,37	707,37	86156,4	2,560	3,384	86162,344
78	8 39 48,37	1,2							
			1,1625	709,25	707,25	86156,36	2,214	3,384	86161,958
78	8 51 37,62	1,125							
			1,075	711,13	709,13	86157,01	1,964	3,426	86162,400
78,2	9 3 28,75	1,025							
77,96						Mean			86162,09925
						Rate of the Clock			— 0,30
						Vibrations in 24 hours			86161,799

Hygrometer 26,85 *moist.* Barometer 30,162

80,8	10 39 11,62	1,4							
			1,35	708,13	706,13	86155,98	2,986	4,759	86163,725
81,7	10 50 59,75	1,3							
			1,25	703,25	701,25	86154,28	2,560	5,012	86161,852
82	11 2 43	1,2							
			1,15	705,75	703,75	86155,15	2,167	5,245	86162,562
82,8	11 14 28,75	1,1							
			1,06	704,5	702,5	86154,72	1,841	5,626	86162,187
83,8	11 26 13,25	1,02							
82,22						Mean			86162,5815
						Rate of the Clock			— 0,30
						Vibrations in 24 hours			86162,281

16*th March A. M.*

Hygrometer 1,25 *dry.* — Barometer 30,128 *Inches.*

Temperature.	Time of Coincidence. h. ' "	Arc of Vibrations.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc. +	Correction for Temperature. +	Vibrations in 24 hours.
84,7	12 37 19	1.375							
			1,3125	701	699	86153,49	2,823	6,281	86162,594
85	12 49 00	1,25							
			1,2	701,75	699,75	86153,76	2,359	6,430	86162,549
85,4	1 00 41,75	1,15							
			1,105	702,62	700,62	86154,02	2,000	6,514	86162,534
85,4	1 12 24,37	1,06							
			1,03	700,88	698,88	86153,45	1,738	6,641	86161,829
86	1 24 5,25	1							
85,3						Mean			86162,3765
						Rate of the Clock			— 0,30
						Vibrations in 24 hours			86162,076

Hygrometer 30,35 *dry.* — Barometer 30,087

90	3 30 57,25	1,4							
			1,35	689,5	687,5	86149,38	2,986	8,460	86160,826
90	3 42 26,75	1,3							
			1,25	691	689	86149,93	2,560	8,449	86160,939
89,9	3 53 57,75	1,2							
			1,16	691,75	689,75	86150,20	2,205	8,449	86160,854
90	4 5 29,5	1,12							
			1,085	691,5	689,5	86150,11	1,929	8,502	86160,541
90,2	4 17 1	1,05							
90,02						Mean			86160,790
						Rate of the Clock			— 0,30
						Vibrations in 24 hours			86160,490

18*th March A. M.*

Rate of the Clock —1,10 — Hygrometer 0,1 *dry.* — Barometer 30,067

81,8	7 54 52,5	1,375							
			1,325	704	702	86154,55	2,876	5,161	86162,587
82,6	8 6 36,5	1,275							
			1,225	705,5	703,5	86155,07	2,459	5,414	86162,943
83,0	8 18 22	1,175							
			1,125	704	702	86154,55	2,074	5,541	86162,165
83,2	8 30 6	1,075							
			1,0375	707	705	86155,59	1,764	5,669	86163,023
83,6	8 41 53	1							
82,64						Mean			86162,6795
						Rate of the Clock			— 1,10
						Vibrations in 24 hours			86161,579

Hygrometer 2,5 *dry.* — Barometer 30,074

83,4	10 18 7,5	1,375							
			1,325	702,12	700,12	86153,89	2,876	5,689	86162,455
83,5	10 29 49,62	1,275							
			1,225	702,38	700,38	86153,98	2,459	5,816	86162,255
84	10 41 32	1,175							
			1,125	703,62	701,62	86154,41	2,074	6,249	86162,733
85,5	10 53 15,62	1,075							
			1,0375	702,88	700,88	86154,15	1,764	6,958	86162,872
87,4	11 4 58,5	1							
84,76						Mean			86162,57875
						Rate of the Clock			— 1,10
						Vibrations in 24 hours			86161,479

18th *March* A. M.

Hygrometer 34,6 *dry.* Barometer 30,067 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "						+	+	
94,8	12 9 40,25	1,45							
			1,40	683,25	681,25	86147,09	3,211	10,660	86160,961
95,6	12 21 3,5	1,35							
			1,30	685,25	683,25	86147,83	2,769	10,913	86161,512
96	12 32 28,75	1,25							
			1,20	684,5	682,5	86147,55	2,359	11,167	86161,076
96,8	12 43 53,25	1,15							
			1,1125	685,12	683,12	86147,78	2,028	11,442	86161,250
97,3	12 55 18,37	1,075							
96,1						Mean.....			86161,19975
						Rate of the Clock.....			— 1,10
						Vibrations in 24 hours..			86160,100

Hygrometer 49 *dry.* Barometer 30,013

93,5	3 1 49,25	1,6							
			1,55	680,5	678,5	86146,07	3,904	10,004	86159,978
93,8	3 13 9,75	1,5							
			1,4375	682,75	680,75	86146,91	3,386	9,856	86160,152
92,8	3 24 32,5	1,375							
			1,3375	685,25	683,25	86147,83	2,931	9,560	86160,321
92,4	3 35 57,75	1,3							
			1,25	686	684,0	86148,1	2,560	9,348	86160,008
91,8	3 47 23,75	1,2							
92,86						Mean.....			86160,11475
						Rate of the Clock.....			— 1,10
						Vibrations in 24 hours..			86159,015

Hygrometer 49,2 *dry.* Barometer 29,998

91,8	3 50 59	1,425							
			1,375	685,25	683,25	86147,83	3,098	9,052	86159,980
91,0	4 2 24,25	1,325							
			1,275	686,25	684,25	86148,05	2,663	9,221	86159,934
92,6	4 13 50,5	1,225							
			1,200	689	687	86149,2	2,359	9,475	86161,034
92,2	4 25 19,5	1,175							
			1,1375	692	690	86150,29	2,120	9,412	86161,822
92,3	4 36 51,5	1,1							
91,98						Mean.....			86160,6925
						Rate of the Clock.....			— 1,10
						Vibrations in 24 hours...			86159,592

19th *March* A. M.

Rate of the Clock — 1,12 Hygrometer 9 *moist.* Barometer 30,047

78,8	6 29 42	1,4							
			1,3625	706	704	86155,24	3,042	3,807	86162,089
79,2	6 41 28	1,325							
			1,275	706,75	704,75	86155,5	2,663	3,934	86162,097
79,4	6 53 14,75	1,225							
			1,1875	708,25	706,25	86156,02	2,310	4,103	86162,433
80	7 5 3	1,15							
			1,1125	709,5	707,5	86156,45	2,028	4,230	86162,708
80	7 16 52,5	1,075							
79,48						Mean.....			86162,33175
						Rate of the Clock....			— 1,12
						Vibrations in 24 hours..			86161,212

19*th March A. M.*

Hygrometer 17,1 *moist.* — Barometer 30,069 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
80,3	8 42 19,5	1,4							
			1,35	703,5	701,5	86154,37	2,986	4,463	86161,819
80,8	8 54 3	1,3							
			1,25	706,5	704,5	86155,41	2,560	4,611	86162,581
81	9 5 49,5	1,2							
			1,15	707,75	705,75	86155,85	2,167	4,695	86162,712
81,2	9 17 37,25	1,1							
			1,05	708,75	706,75	86156,17	1,806	4,801	86162,777
81,5	9 29 26	1							
89,96						Mean.....			86162,47225
						Rate of the Clock.....			— 1,12
						Vibrations in 24 hours..			86161,352

Hygrometer 11,8 *moist.* — Barometer 30,071

83	10 29 16,5	1,4							
			1,35	702,75	700,75	86154,11	2,98	5,626	86162,716
83,4	10 40 59,25	1,3							
			1,25	702,75	700,75	86154,11	2,560	5,943	86162,613
84,7	10 52 42	1,2							
			1,15	701,25	699,25	86153,58	2,167	6,345	86162,092
85,3	11 4 23,25	1,1							
			1,0625	702,25	700,25	86153,93	1,850	6,789	86162,569
86,8	11 16 5,5	1,025							
84,64						Mean.....			86162,4975
						Rate of the Clock.....			— 1,12
						Vibrations in 24 hours..			86161,377

Hygrometer 24,45 *dry.* — Barometer 30,043

91,3	12 32 23,5	1,4							
			1,35	689,25	687,25	86149,29	2,986	9,200	86161,476
92,2	12 43 52,75	1,3							
			1,25	689,75	687,75	86149,47	2,560	9,433	86161,463
92,5	12 55 22,5	1,2							
			1,15	690	688	86149,57	2,167	9,623	86161,360
93	1 6 52,5	1,1							
			1,075	690,37	688,37	86149,7	1,964	9,898	86161,562
93,8	1 18 12,87	1,05							
92,56						Mean.....			86161,46525
						Rate of the Clock.....			— 1,12
						Vibrations in 24 hours..			86160,345

Hygrometer 41,7 *dry.* — Barometer 30,003

95,3	2 40 44,5	1,375							
			1,325	685,25	683,25	86147,83	2,876	10,490	86161,196
94,3	2 52 9,75	1,275							
			1,225	689,87	687,87	86149,52	2,459	10,490	86162,469
95,3	3 3 39,62	1,175							
			1,1375	680,38	678,38	86146,02	2,120	10,744	86158,884
95,5	3 15 00	1,1							
			1,05	686,5	684,5	86148,29	1,806	10,638	86160,734
94,8	3 26 26,5	1							
95,04						Mean.....			86160,82075
						Rate of the Clock.....			— 1,12
						Vibrations in 24 hours..			86159,701

1823. *20th March A. M.*

Rate of the Clock — 0,38 — Hygrometer 20,55 *moist.* — Barometer 30,075 *Inches.*

Temperature.	Time of Coincidence.	Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h. ' "			"			+	+	
79,7	7 35 32,37	1,5	1,45	702,38	700,38	86153,98	3,445	4,166	86161,591
80	7 47 14 75	1,4	1,3375	706	704	86155,24	2,931	4,230	86162,401
80	7 59 00,75	1,275	1,225	707	705	86155,59	2,459	4,272	86162,321
80,2	8 10 47,75	1,175	1,1375	706,5	704,5	86155,41	2,120	4,315	86161,845
80,2	8 22 34,25	1,1							
80,02						Mean.....			86162,0395
						Rate of the Clock.....			— 0,38
						Vibrations in 24 hours..			86161,659

Hygrometer 11,6 *moist.* — Barometer 30,080

82	10 25 12	1,45	1,40	701,5	699,5	86153,67	3,211	5,203	86162,084
82,6	10 36 53,5	1,35	1,2875	703,75	701,75	86154,46	2,716	5,457	86162,633
83,2	10 48 37,25	1,225	1,1875	702,75	700,75	86154,11	2,310	5,710	86162,130
83,8	11 00 20	1,15	1,100	702,5	700,5	86154,02	1,982	6,028	86162,030
84,7	11 12 2,5	1,05							
83,26						Mean.....			86162,21925
						Rate of the Clock.....			— 0,38
						Vibrations in 24 hours..			86161,839

Hygrometer 6,2 *dry.* — Barometer 30,068

85,5	12 14 34,25	1,5	1,45	695,25	693,25	86151,46	3,445	6,535	86161,440
85,4	12 26 9,5	1,4	1,35	698	696	86152,44	2,986	6,387	86161,813
84,8	12 37 47,5	1,3	1,25	701	699	86153,49	2,560	6,028	86162,078
83,7	12 49 28,5	1,2	1,15	703	701	86154,2	2,167	5,668	86162,035
83,2	1 1 11,5	1,1							
84,5						Mean.....			86161,8415
						Rate of the Clock....			— 0,38
						Vibrations in 24 hours..			86161,461

Hygrometer 7,7 *dry.* — Barometer 30,018

84	2 28 12	1,4	1,35	699,5	697,5	86152,97	2,986	6,091	86162,047
84 8	3 39 51,5	1,3	1,25	702	700	86153,85	2,560	6,155	86162,565
84 3	2 51 33,5	1,2	1,1625	701,25	699,25	86153,58	2,214	6,408	86162,202
86	3 3 14,75	1,125	1,100	700	698	86153,14	1,982	6,599	86161,721
85,2	3 14 54,75	1,075							
84,86						Mean.....			86162,13375
						Rate of the Clock.....			— 0,38
						Vibrations in 24 hours..			86161,754

20th March A. M.

Hygrometer 22,05 *dry.* Barometer *Inches.* 30,015

Temperature.	Time of Coincidence.			Arc of Vibration.	Mean Arc.	Interval in Seconds.	Number of Vibrations.	Observed Vibrations in 24 hours.	Correction for Arc.	Correction for Temperature.	Vibrations in 24 hours.
	h.	'	"			"			+	+	
85,4	4	14	47,5	1,4							
					1,35	698,25	696,25	86152,52	2,986	6,387	86161,893
84,8	4	26	25,75	1,3							
					1,25	698,75	696,75	86152,70	2,560	6,091	86161,351
84	4	38	4,5	1,2							
					1,1625	702	700,0	86153,85	2,214	5,710	86161,700
83	4	49	45,5	1,125							
					1,100	703	701,0	86154,2	1,982	5,372	86161,554
82,4	5	1	29,5	1,075							
83,92										Mean.....	86161,6245
										Rate of the Clock.....	— 0,38
										Vibrations in 24 hours..	86161,245

Table of the Results of the foregoing Experiments.

First Set (L.)

Day 1823	Time of the Experiment.	Mean Height of the Thermometer.	Mean Height of the Barometer.	Mean Height of the Hygrometer.	Number of Vibrations in 24 hours at the Temperature of 70° of Fahrenheit.
			Inches.		
February 15	A. M.	82,5	30,225	8 *moist.*	86158,844
	A. M.	86,17	30,213	9 *dry.*	86158,196
	P. M.	94,33	30,183	32	86157,221
	P. M.	90,67	30,148	39,5	86157,844
16	A. M.	82,17	30,185	2,5	86159,412
	A. M.	85,33	30,208	12,5	86159,073
	A. M.	90,33	30,208	21,5	86158,149
	P. M.	96,83	30,163	43	86157,687
	,,	91,33	30,134	46	86158,422
17	A. M.	80,67	30,181	3	86159,678
	,,	83	30,174	7	86159.331
	,,	85,21	30,173	11,5	86158,784
	P. M.	94,20	30,143	38,5	86157,214
	,,	95,9	30,103	40	86158 773
18	A. M.	80,25	30,135	8	86159,514
	,,	82,24	30,153	10	86159,450
	P. M.	91,7	30,154	30	86157,787
	,,	96,72	30,133	47	86157,538
	,,	94,5	30,098	43,5	86158,266
19	A. M.	81,65	30,149	13	86159,155
	,,	83,55	30,133	12,3	86159,493
	P. M.	93,2	30,133	29,5	86158,223
	,,	97,04	30,128	42,5	86158,116
	,,	91,85	30,103	50	86158,523
	,,	88,78	30,103	48	86159 213
20	A. M.	81,12	30,113	14	86159,983
	,,	83,76	30,148	16,5	86159,460
	,,	87,21	30,154	22,5	86159,180
	P. M.	92,1	30,139	46	86159,585
	,,	94,6	30,113	46	86158,211
		88,63	30,151	26,72 *dry.*	86158,674

Table of the Results of the foregoing Experiments.

Second Set (L.)

Day 1823	Time of the Experiment.	Mean Height of the Thermometer.	Barometer.	Hygrometer.	Number of Vibrations in 24 hours at the Temperature of 70° of Fahrenheit
		°	*Inches.*		
February 22	A. M.	81,2	30,156	12,3 *dry.*	86161,333
	,,	82,65	30,183	17	86161,576
	,,	90,5	30,163	27,5	86160,004
	P. M.	94,35	30,143	45,5	86159,405
	,,	92,5	30,093	57,5	86159,877
	,,	88,2	30,093	53	86160,280
23	A. M.	80,5	30,097	16,5	86159,820
	,,	83,3	30,153	20	86160,004
	,,	85,24	30,153	24,5	86159,773
	P. M.	93,8	30,113	46,5	86158,816
	,,	94,5	30,060	54	86158,024
24	A. M.	82,72	30,090	21,5	86160,507
	,,	83,80	30,155	28	86160,152
	P. M.	91,25	30,101	39,5	86160,378
	,,	97,8	30,068	56	86158,135
	,,	93,7	30,039	57	86158,398
	,,	88,7	30,039	55	86158,713
25	A. M.	78,7	30,085	4,5	86160,733
	,,	79,55	30,105	1,5	86160,799
	,,	82,8	30,109	11	86161,074
	P. M.	88,7	30,053	26	86159,426
	,,	90,35	30,031	39	86160,076
26	A. M.	81,65	30,041	10	86160,448
	,,	83,14	30,046	16,5	86160,534
	P. M.	89,4	30,048	34	86158,858
	,,	95,55	30,029	55	86158,173
	,,	93,7	30,012	57	86158,215
	,,	89,6	30,006	55	86158,403
		87,78	30,088	33,6 *dry.*	86159,712

Table of the Results of the foregoing Experiments.

Third Set (L.)

Day 1823.	Time of the Experiment.	Mean Height of the Thermometer.	Mean Height of the Barometer.	Mean Height of the Hygrometer.	Number of Vibrations in 24 hours at the Temperature of 70° of Fahrenheit.
		°	*Inches.*		
March 1	A. M.	80,55	30,051	1,5 *moist.*	86160,395
	,,	81,86	30,053	2,5 *dry.*	86160,744
	,,	89,5	30,040	29	86160,142
	P. M.	94,19	30,021	51,5	86159,220
	,,	92,95	30,011	52,5	86159,389
	,,	89,22	30,011	51	86159,585
3	A. M.	76,2	30,051	29 *moist.*	86160,395
	,,	79,3	30,090	26	86160,799
	,,	85,16	30,073	10 *dry.*	86161,031
	P. M.	87,49	30,026	27	86161,714
	,,	88,70	30,013	37	86159,944
4	A. M.	81,05	30,066	31 *moist.*	86160,940
	,,	84,12	30,058	17	86160,660
	P. M.	83,74	30,038	11,5	86160,571
	,,	82,96	30,012	5,3 *dry.*	86160,009
9	A. M.	81,44	30,151	1 *moist.*	86161,038
	,,	82,46	30,156	11 *dry.*	86160,879
	P. M.	82,4	30,123	16	86160,752
	,,	84,2	30,081	20,5	86161,327
	,,	83,4	30,091	23	86161,022
10	A. M.	80,2	30,121	6 *moist.*	86160,388
	,,	82,36	30,157	3,5 *dry.*	86161,423
	,,	83,86	30,153	13,5	86160,891
	P. M.	87,44	30,131	25	86160,945
	,,	89,46	30,073	21,5	86160,276
12	A. M.	80,3	30,076	12 *moist.*	86161,620
	,,	82,54	30,124	7,5	86161,990
	,,	84,76	30,113	3	86162,007
	P. M.	85,58	30,078	1,5 *dry.*	86161,230
	,,	86,46	30,072	3,5	86161,010
		84,462	30,077	13,7 *dry.*	86160,778

Table of the Results of the foregoing Experiments:

Fourth Set (L.)

Day 1823	Time of the Experiment.	Mean Height of the Thermometer.	Mean Height of the Barometer.	Mean Height of the Hygrometer.	Number of Vibrations in 24 hours at the Temperature of 70° of Fahrenheit.
			Inches.		
March 13	A. M.	80,76	30,103	24,5 *moist.*	86160,700
	,,	82,9	30,131	18,5 *dry.*	86161,594
	P. M.	91,04	30,125	17,5	86160,955
	,,	94,94	30,098	44,5	86159,517
	,,	93,32	30,081	48,5	86159,852
14	A. M.	80,86	30,086	4 *moist.*	86162,009
	,,	83,28	30,133	4	86162,090
	,,	86,1	30,133	0	86162,090
	P. M.	96,76	30,103	44 *dry.*	86160,713
	,,	96	30,085	51	86161,118
	,,	95,76	30,072	48	86160,745
16	A. M.	77,08	30,141	35,5 *moist.*	86161,320
	,,	80,04	30,164	32,5	86161,382
	,,	84,7	30,164	9	86161,794
	P. M.	84,94	30,121	8,5 *dry.*	86159,900
	,,	89,8	30,153	22,5	86160,264
18	A. M.	81,26	30,056	4,5	86161,668
	,,	83,2	30,059	1	86161,257
	,,	92,22	30,077	15,5	86160,625
	P. M.	96,56	30,004	42,5	86159,677
	,,	94,58	30,041	46,5	86158,703
19	A. M.	80,04	30,062	11 *moist.*	86161,161
	,,	82,18	30,082	17,5	86161,559
	,,	89,92	30,069	7 *dry.*	86160,802
	P. M.	95,95	30,041	34,5	86159,916
	,,	94,08	30,011	53,5	86160,056
20	A. M.	79,46	30,064	11 *moist.*	86161,575
	,,	81,16	30,116	18	86162,023
	,,	85,38	30,073	1	86161,499
	P. M.	82,78	30,055	4,5 *dry.*	86161,954
	,,	86,04	30,023	16	86161,387
		87,20	30,091	18,95 *dry.*	86160,694

Tables of the Results of the foregoing Experiments.

First Set. (R.)

Day 1823	Time of the Experiment.	Mean Height of the Thermometer:	Barometer.	Hygrometer.	Number of Vibrations in 24 hours at the Temperature of 70° of Fahrenheit.
		°	*Inches.*		
February 15	A. M.	80,84	30,170	6,25 *moist.*	86159,059
	,,	80,84	30,193	5,65	86158,760
	P. M.	92,36	30,208	27,05 *dry.*	86157,222
	,,	93,84	30,153	40	86157,327
16	A. M.	80,24	30,160	2,35	86159,116
	,,	83,5	30,192	5,15	86159,456
	,,	83,7	30,194	8,3	86159,277
	P. M.	94,4	30,188	35,9	86157,829
	,,	96,56	30,133	47,25	86157,895
17	A. M.	81,24	30,159	4,35	86159,204
	,,	82,16	30,168	4,5	86159,131
	P. M.	90,16	30,156	24,05	86159,000
	,,	88,2	30,118	41,30	86158,381
	,,	85,5	30,048	35,85	86160,260
18	A. M.	79,08	30,103	8,4	86159,208
	,,	81,12	30,140	8,15	86159,665
	,,	85	30,151	14,30	86160,152
	P. M.	95,56	30,141	46,20	86157,523
	,,	96,2	30,103	54,6	86158,152
19	A. M.	81,7	30,127	17	86159,510
	,,	82,36	30,150	8,4	86159,555
	,,	87,1	30,144	15,85	86158,895
	P. M.	96,6	30,144	44,55	86157,973
	,,	93,68	30,110	51,5	86158,177
20	A. M.	82,1	30,134	12,5	86159,857
	,,	82,2	30,135	12,25	86159,663
	P. M.	89,76	30,135	34,95	86157,870
	,,	94,5	30,130	51,25	86157,828
	,,	89,04	30,097	52	86158,911
		87,23	30,144	24,00 *dry.*	86158,788

Second Set (R.)

Day 1823	Time of the Experiment.	Mean Height of the Thermometer.	Mean Height of the Barometer.	Mean Height of the Hygrometer.	Number of Vibrations in 24 hours at the Temperature of 70° of Fahrenheit
		°	*Inches.*		
February 22	A. M.	81,86	30,187	14,55 *dry.*	86161,148
	,,	85,36	30,189	19,45	86161,385
	P. M.	92,7	30,160	50,4	86160,527
	,,	93,28	30,115	57,3	86159,194
23	A. M.	81,18	30,141	16,3	86159,696
	,,	82,32	30,148	17,7	86160,07
	,,	91,1	30,129	37,45	86159,159
	P. M.	95,86	30,078	55,85	86158,315
	,,	90,4	30,051	55,1	86158,165
24	A. M.	80,9	30,080	20,5	86159,607
	,,	82,86	30,128	25,15	86160,472
	,,	86,02	30,125	30,2	86160,741
	P M.	94,7	30,085	51,75	86158,67
	,,	96,92	30,050	60,5	86158,186
25	A. M.	79,12	30,098	1,15 *moist.*	86160,257
	,,	80,56	30,112	0,6 *dry.*	86160,878
	P. M.	84,7	30,078	18,8	86159,759
	,,	89,7	30,045	35,95	86159,012
	,,	88,08	30,041	41,25	86158,97
26	A. M.	80,72	30,023	8,7	86160,314
	,,	82,7	30,048	13,35	86160,633
	,,	85,18	30,053	21,85	86159,789
	P. M.	92,8	30,041	49,2	86158,369
	,,	95,02	30,013	58,25	86158,107
		87,25	30,092	31,62 *dry.*	86159,643

Third Set (R.)

Day 1823	Time of the Experiment.	Mean Height of the Thermometer.	Barometer.	Hygrometer.	Number of Vibrations in 24 hours at the Temperature of 70° of Fahrenheit.
		°	*Inches.*		
March 1	A. M.	79,68	30,032	3,35 *moist.*	86161,392
	,,	80,93	30,055	0,45 *dry.*	86160,739
	,,	83,84	30,062	11,8	86160,25
	P. M.	93,44	30,035	46,5	86159,849
	,,	94,2	30,009	53,9	86159,032
3	A. M.	77,26	30,075	28,60 *moist.*	86160,323
	,,	82,23	30,090	8,8	86160,794
	P. M.	85,42	30,051	20,45 *dry.*	86160,924
	,,	89,44	30,018	35,5	86160,578
	,,	85,84	30,012	37,25	86160,297
4	A. M.	77,52	30,041	23,00 *moist.*	86161,862
	,,	78,78	30,057	28,55	86161,931
	,,	84,02	30,078	27,75	86161,482
	P. M.	85,66	30,033	1,1 *dry.*	86160,496
	,,	81,96	30,011	4,05	86160,633
9	A. M.	80,04	30,135	2,3 *moist.*	86160,515
	,,	81,8	30,153	6,2 *dry.*	86161,776
	,,	82,72	30,143	15,1	86161,788
	P. M.	83,36	30,082	17,15	86161,090
	,,	84,84	30,070	21,85	86160,840
10	A. M.	81,82	30,125	5,65 *moist.*	86161,849
	,,	81,66	30,147	1,45	86161,691
	P. M.	86,02	30,140	16,35 *dry.*	86161,758
	,,	88,74	30,085	37,4	86161,053
	,,	86,42	30,073	40,95	86160,313
12	A. M.	81,42	30,102	14,35 *moist.*	86161,519
	,,	81,8	30,108	12,65	86161,877
	,,	82,7	30,105	3,75 *dry.*	86161,382
	P. M.	83,38	30,088	0,90	86161,791
	,,	86,08	30,049	7,75	86161,034
	,,	85,44	30,050	8,8	86161,241
		83,82	30,075	7,44 *dry.*	86161,035

Fourth Set (R.)

Day 1823.	Time of the Experiment.	Mean Height of the Thermometer.	Mean Height of the Barometer.	Mean Height of the Hygrometer.	Number of Vibrations in 24 hours at the Temperature of 70° of Fahrenheit.
			Inches.		
March 13	A. M.	79,58	30,081	24,12 *moist.*	86160,602
	,,	81,66	30,126	22,35	86161,401
	,,	86,96	30,122	5,30	86161,421
	P. M.	94,42	30,101	37,9 *dry.*	86160,102
	,,	94,4	30,078	48,05	86159,977
14	A. M.	81,92	30,093	4,9 *moist.*	86161,762
	,,	82,28	30,117	6,85	86161,668
	,,	91,74	30,118	25,0 *dry.*	86161,772
	P. M.	94,18	30,093	33,6	86161,383
	,,	94,06	30,050	47,85	86161,171
16	A. M.	77,96	30,147	34,75 *moist.*	86161,799
	,,	82,22	30,163	26,85	86162,281
	P. M.	85,3	30,128	1,25 *dry.*	86162,076
	,,	90,02	30,087	30,35	86160,490
18	A. M.	82,84	30,067	0,10	86161,579
	,,	84,76	30,074	2,5	86161,479
	P. M.	96,1	30,067	34,6	86160,100
	,,	92,86	30,013	49,0	86159,015
	,,	91,98	29,998	49,2	86159,592
19	A. M.	79,48	30,050	9,0 *moist.*	86161,212
	,,	80,96	30,069	17,1	86161,352
	,,	84,64	30,071	11,8	86161,377
	P. M.	92,56	30,043	24,45 *dry.*	86160,345
	,,	95,04	30,003	41,7	86159,701
20	A. M.	80,02	30,075	20,55 *moist.*	86161,659
	,,	83,26	30,070	11,6	86161,839
	P. M.	84,5	30,068	6,2 *dry.*	86161,461
	,,	84,86	30,018	7,7	86161,754
	,,	83,92	30,015	22,05	86161,245
		86,71	30,076	9,18 *dry.*	86161,09

Remark.—Great Changes in the Atmosphere took place, it will be seen, during the time these Experiments were making—In the course of a day, we find the Thermometer at the commencement of the Experiments in the Morning at 79° or 80°, the Hygrometer from 24° to 35° moist—and in the afternoon of the same day, while the Experiments were going on, the heat increased to 96° or 97°—the Hygrometer at the same time shewing from 30° to 48° dry; and considerable Variations, though not quite to so great an extent as these, are common—The Nights being generally cold with Dew sometimes, and sometimes Rain falling—Rain also fell on some of the days.

Although the Observatory was of treble Tent-cloth, and the part above the Apparatus covered with a large Tarpaulin, it was to be expected, that the Pendulum must have felt such changes as these, and in a degree not shewn, I imagine, by the Instruments used for reducing the Experiments—The only Corrections now required are for the Buoyancy of the Atmosphere, and for the Height of the Pendulum, above the Level of the Sea—That for the latter will be the same for all the Sets—and the Heights of the Barometer, used for the former of these Corrections, vary but little in the four Sets—but it will be seen, almost invariably, when the Hygrometer shewed the Atmosphere to be damp, the Vibrations in 24 hours were greater than when it was in a dry state—The Observations commenced early in the day, after the Pendulum had been under the influence of the chill and damp of the Night, and I am led to think retained a much greater degree of cold, than was exhibited by the Thermometer, particularly during the time the moisture it might have collected, was evaporating, by the influence of the Sun—Hence the greater number of Vibrations at such times: Again, great heat in the middle of the day, might be retained by the metal of which the Pendulum is composed—in a greater degree and longer than the Air—Hence the greater the expansion of the Pendulum, and the consequent fewer number of Vibrations in 24 hours, than would have been shewn under a more equable state of the Atmosphere*—The differences, exclusive of such part as are attributable to the different Heights of the Barometer, though very obvious, are not large; and if the Changes in the Atmosphere which we have noticed, give in one case too small a number of Vibrations, and in the other a number too large, the Mean will probably shew as correct a Result, as could be obtained under the most favorable circumstances. Before closing this Remark, I shall take the opportunity to state, that the Barometer sent with the Expedition, though the best to be procured here, and a good one, as far as related to the Rise and Fall of the Mercury; yet from some *general* defect (in the Scale probably) shewed the Height less than it ought—and by Comparisons with the Observatory Barometer, both before the Expedition left Madras, and after its return, the exact difference was 0,103 Inch—this Correction has accordingly been applied, to all the Heights of the Barometer registered with the Experiments and Observations.

* Some Experiments, which I have since made at the Observatory, confirm the opinion above given—during the time however of making the Experiments, although great changes took place in the Thermometer, there were none in the Hygrometer—and it appears to have been when there were considerable changes in the latter, that the greatest effect of the Atmosphere was felt by the Pendulum at the Island.

We shall now proceed to apply the remaining CORRECTIONS. The *Specific Gravity* of the Pendulum was ascertained for the Madras Experiments in the manner stated in my Paper published in the *Philosophical Transactions*; I was anxious to have this verified, and if possible, by a more accurate Apparatus than I was able to submit the Pendulum to before—this it occurred to me might probably be done at the Mint; and I accordingly addressed *The Honorable* THE GOVERNOR *in Council* upon the subject; an Order was immediately sent to the Assay Master, *Dr. Aitken*, to have the Operation performed---this was most carefully done, and the Mean Result of three trials on different days, was as follows.

Thermometer.	Barometer.	Specific Gravity.
91°	29,9551	7,966

Distilled Water was used on the two first days, and Rain Water on the third day; the Results however differed very little. The Specific Gravity of the Pendulum formerly found, the Thermometer having been 88° and the Barometer 30,064, was 8,1085; the difference therefore is not very considerable; but I shall of course use the Mint Specific Gravity in the following Computations, and also by it, re-calculate the Correction for the Buoyancy of the Atmosphere, applied to the Experiments for finding the Length of the Pendulum at *Madras*.

The weight of Water at 53° of the Thermometer and 29,27 inches of the Barometer, is as 836 to 1--the Expansion of Air for each degree of the Thermometer being $\frac{1}{440}$ of its bulk—The Specific Gravity of the Pendulum, at that Height of the Thermometer and Barometer, will therefore be 7,5414.

Correction for the BUOYANCY *of the* ATMOSPHERE.

*First Set (*L.*)*

Therm.	Barom.	Vibrations in 24 hours.
88,63	30,151	86158,674
53	29,270	
35,63		

Then 1,7417 × 35,63 = ... 62,0568

30,151 : 836 :: 29,270 : 811,5724

873,6292

836 : 7,5414 :: 873,6292 : 7,8808 Specific Gravity.

And 873,6292 × 7,8808 = 6884,8970 the Pendulum heavier than Air.

Square of the No. of Vibrations, 86158,674 = 7423317105,4383 divided by 6884,8970 = 1078203,073 × the Square of the Number of Vibrations in 24 hours, and the Square Root of the same, gives the Number of Vibrations in 24 hours, corrected for the Buoyancy of the Atmosphere = 86164,931 or + 6,257 Vibrations, for the Correction.

In like manner the Corrections for the Buoyancy of the Atmosphere were

found for the other Sets (*L.*)---and are---for the *Second Set* + 6,254: for the *Third* + 6,333, and for the *Fourth* + 6,269.

The Corrected number of Vibrations in 24 hours will therefore be---*First Set* 86164,931. *Second* 86165,966. *Third* 86167,111. *Fourth* 86167,233.

Following the same process with the Results (*R.*), we shall have the Correction on account of the Buoyancy of the Atmosphere for the *First Set* 6,2892; for the *Second* 6,2685; for the *Third* 6,3486; and for the *Fourth* 6,2759.

And the corrected number of Vibrations—*First* Set 86165,0772. *Second* 86165,9115. *Third* 86167,3836. And the *Fourth* 86167,3659.

It now only remains to ascertain and apply the Correction for the Height of the Pendulum above the Level of the Sea—The Height of the Pendulum above the Level of the Sea at low water, was 12½ feet, or 0,00236742 of a mile; the Radius of the Earth at the Equator being allowed 3967,5 miles—Hence the Correction for the Height of the Pendulum above the Level of the Sea, will be + 0,0514 of a Vibration.

The true number of Vibrations in 24 hours will therefore be

First	Set	(L.)	86164,9822
Second	„	„	86166,0177
Third	„	„	86167,1624
Fourth	„	„	86167,2848
First	Set	(R.)	86165,1286
Second	„	„	86165,9629
Third	„	„	86167,4350
Fourth	„	„	86167,4173

In London Latitude 51° 31' 8,4", the *Pendulum of Experiment* made 86293,14 Vibrations in 24 hours; the Thermometer being 67,6, and the Barometer 29,97 inches; the Height above the Level of the Sea 83 feet; Hence the Correction for the Buoyancy of the Atmosphere, allowing the *Mint* Specific Gravity, will be + 6,7478; and that for the Height above the Sea + 0,22: The true Number of Vibrations in 24 hours will therefore be 86300,1078; the Square of which is 7447708606,2916.

The Length of the Seconds Pendulum in London at the Temperature of 70°, deduced from *Captain Kater's* Experiments, is 39,142434 inches.

Now $86300{,}1078^2 : 86400^2 :: 39{,}142434 : 39{,}23310101$ inches, the Length of the Pendulum of Experiment.

Then by the *First* Set (*L*) $86400^2 : 86164{,}9822^2 :: 39{,}23310101 : 39{,}0199543268$ *the Length of the Pendulum at Gaunsah Lout.*

By the same Operation *the Length of the Pendulum at Gaunsah Lout* by the *Second* Set (*L.*) is 39,0208915108. By the *Third* 39,0219289661. By the *Fourth* 39,0220398271 *Inches.*

Repeating the Operation, the *First* Set (*R.*) gives the Length of the Pen-

dulum at *Gaunsah Lout* 39,0200869218: The *Second* 39,0208425551: The *Third* 39,0221758674: And the *Fourth Set* 39,02215983605 *Inches.*

The mean of these will be—

Sets (L.)
- First....39,0199543268
- Second..39,0208915108
- Mean 39,0204229188
- Third...39,0219289661
- Fourth..39,0220398271
- „ 39,0219843966
- Mean of the four Sets. 39,0212036577

Also,

Sets (R.)
- First....39,0200869218
- Second..39,0208425551
- Mean 39,0204647384
- Third...39,0221758674
- Fourth..39,02215983605
- „ 39,0221678517
- Mean of the four Sets (*R.*)..39,0213162951
- Mean of „ „ (*L.*)..39,0212036577

Length of the Pendulum at Pulo Gaunsah Lout by the Mean of all the Experiments. *Inches.* 39,0212599764

The Latitude *of Pulo Gaunsah Lout, according to the* Mean *of the* Meridian Observations, *as hereafter deduced, is* 0° 1' 48,78" *North.*

Then by combining the London *Observations and those at* Gaunsah Lout, *we have the LENGTH of the PENDULUM at the EQUATOR* 39,02125994 *Inches.*

We now proceed to deduce the Length of the Pendulum at Madras *by the Specific Gravity found at the* Mint.

During the time of taking the First Series of Experiments at Madras, the Mean Height of the Thermometer was 83,48°, of the Barometer 30,121---the Number of Vibrations in 24 hours 86166,108. Hence we find that the Correction for the Buoyancy of the Atmosphere is + 6,376. The Mean Height of the Thermometer during the time of taking the Second Series was 85,49°, of the Barometer 30,258, the Number of Vibrations in 24 hours 86166,048; and the Correction now deduced for the Buoyancy of the Atmosphere + 6,373. The Correction for the Height above the level of the Sea, as formerly found, is + 0,095. These Corrections being applied, we shall find the true Number of Vibrations in 24 hours by the *First Series* 86172,579; and by the Second Series 86172,521; the Mean being 86172,550.

Hence the LENGTH *of the* PENDULUM *at the* MADRAS OBSERVATORY, in LATITUDE 13° 4' 9,1" North by the *First Series* will be 39,0268350769; and by the *Second Series* 39,0267825415---the *Mean of both* being 39,0268088092 *Inches.*

Then by combining the LONDON *with the* MADRAS EXPERIMENTS, *and taking the* LENGTH *of the* PENDULUM *at the* EQUATOR, *deduced from the* GAUNSAH LOUT EXPERIMENTS,* *we find the diminution of* GRAVITY *from the* POLE *to the* EQUATOR *to be* ,0052756159 *; and the* ELLIPTICITY *of the* EARTH $\frac{1}{296,61.}$

* The Length of the Pendulum at the Equator by Computation, with the data here given, will be 39,01628254 Inches; differing from the measurement 0,00497740 of an Inch; the Diminution of Gravity from the Pole to the Equator, using the computed Length of the Pendulum will be, ,00527629, and the *Ellipticity of the Earth* $\frac{1}{296,57}$

The following Portion of the REPORT *shews the Deductions from the Observations given in the former part of it, of the Geographical Situation of* PULO GAUNSAH LOUT, *of* BENCOOLEN, *and other* PLACES *seen on the* EXPEDITION.

RATES OF CHRONOMETERS

at the

MADRAS OBSERVATORY.

	H.	M.	S.	
Longitude....	5	21	25	E.
	Or 80°	17	21	

The EXPEDITION *taking its departure for* BENCOOLEN.

Day of the Month.	ARNOLD. No. 397.	ARNOLD. No. 391.	EARNSHAW.	Remarks.
1822	S.	S.	S.	
Feb. 21 to 22	,,	— 5,1	— 3,2	
23	,,	21,5	10,8	
24	,,	9,9	+ 1,5	
25	,,	15,9	— 2,3	
26	+ 3,4	14,5	5,5	
27	5,0	14,8	4,6	
28	4,9	17,1	2,9	
March 1	3,4	16,9	2,8	
2	7,1	8,6	3,2	
3	1,4	5,2	1,6	
4	1,9	15,8	+ 1,2	
5	6,3	18,3	— 9,4	
6	4,0	22,6	0,2	
7	3,4	1,2	3,8	
8	0,1	14,7	2,9	
9	0,0	17,4	0,0	
10	3,4	+ 2,4	2,8	
11	1,6	— 3,8	2,9	
12	0,9	6,2	3,1	
13	2,2	5,1	1,9	
Mean Rate..	+3,06	— 11,1	— 3,56	

DIFFERENCE of CHRONOMETERS *and* MEAN TIME.

		H.	M.	S.
1822 March 13 at Noon, No. 397.	Fast for Mean Time	0	0	5,5
,, ,, No. 391.	Slow for Mean Time	0	1	56,6
,, ,, *Earnshaw.*	Fast for Mean Time	0	5	46,7

Rates of Chronometers

at the

Madras Observatory.

On the Return of the Expedition from Bencoolen.

Day of the Month.	Arnold No. 391.	Earnshaw.	Remarks.
1823	S.	S.	*Chronometer 397 owing to an accident became useless, some time before the Expedition returned to Bencoolen.*
June 5 to 6	—16,2	+ 9,8	
7	17,0	11,0	
8	21,1	9,9	
9	18,4	13,6	
10	15,0	16,0	
11	21,8	14,2	
12	20,4	14,6	
13	12,8	19,2	
14	16,5	18,5	
15	15,3	15,8	
Mean Rate..	—17,45	+ 14,26	

Difference of Chronometers and Mean Time.

				H.	M.	S.			H.	M.	S.
1323. June 6 at	Noon,	No. 391.	Slow	3	30	13,5	*Earnshaw.*	Fast	00	21	24,5
7	„	„	„	3	30	30,5	„	„	00	21	35,5
8	„	„	„	3	30	51,6	„	„	00	21	45,4

Mean Declinations of *Stars* at the beginning of the Year 1793—some not visible in Europe*—from Observations, by *J. Goldingham, Esq. F. R. S.*

Names of Stars.	No. of Observations.	Mean Declination of the beginning of the year 1793.
		° ′ ″
α Centauri	2	59 58 37,4 S.
β Crucis	1	58 33 15,6
Antares	4	25 57 27,1
β Scorpionis	2	19 13 41,2
Canopus	12	52 35 25,2
γ Navis	2	46 44 04,3
α Gruis	9	47 57 13,1
γ Crucis	1	55 57 12,9
ε Scorpionis	3	33 53 59,6
ε Sagittarii	4	34 27 54,7
δ Navis	2	53 57 06,0
ζ Navis	1	39 25 30,1
α Phœnicis	9	43 25 46,12
α Pavonis	4	57 22 30,3
β Centauri	2	59 21 42,06
β Ceti	17	19 07 23,41
Achernar	13	58 17 33,06
α Columbæ	9	34 11 38,97
Sirius	9	16 26 31,23
β Columbæ	4	35 51 35,53
β Phœnicis	4	47 49 48,56
γ Phœnicis	6	44 23 08,36
12 Eridani	10	29 48 55,87
δ Canis Maj	6	26 04 30,42
η Canis Maj	5	28 54 32,24
α Cassiopeiæ	12	55 24 01,16 N.
Capella	10	45 46 07,75
α Cygni	10	44 32 48,62

* I have inserted this Table, because the Declinations of these Stars, which are not visible in Europe, have been taken from it, in computing the Latitudes, and because the Table, has not, so far as I know been in print before, and therefore if required, could not have been referred to: The Declinations of those Stars visible in Europe, particularly of the Northern Stars, have been computed, from the Observations taken at the time, and given, chiefly with the view of shewing how far the other Declinations, used in computing the Latitudes, may be depended upon. Of course, wherever I could find Declinations, deduced from Observations with the large and valuable Instruments now in use in Europe, I have taken such in preference to any other Declinations. According to recent Observations by the Astronomer Royal with the large Circle now set up at Greenwich, the Declination of α Cassiopeiæ at the beginning of the year 1793, was 55° 24′ 1,3″; that of Capella 45 46 8,1; and that of α Cygni 44 32 50,6—differing from the Declinations in the above Table only 0,14 for the first Star; 0,35 for the second; and 1,98 for the third—a near agreement, and scarcely to be expected in Observations, some taken, as those in the above Table were, with a Sextant and Artificial Horizon 30 years ago, and others with the grand Instrument abovementioned.

Latitude of Pulo Gaunsah Lout:

By the Stars. (L.)

1822 Month.	Stars.	Meridian Altitude.	Corrected Refraction.	Mean Declination.	Nutation.	Aberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude North.
		° ′ ″	′ ″	° ′ ″	″		° ′ ″	° ′ ″	° ′ ″	° ′ ″
			−		−	+				
Dec. 23	Archernar ...	31 51 22,5 S.	1 25,2	58 09 54,2 S.	7,4	15,9	31 49 57,3 S.	58 10 02,7 N.	58 08 25,2 S.	0 01 37,5
					+					
	β Persei.....	49 46 15 N.	0 45,2	40 16 11,7 N.	8,1	9,5	49 45 29,8 N.	40 14 30,2 S.	40 16 23,9 N.	0 01 53,7
	Capella.....	44 14 15	0 54,3	*			44 13 20,7 S.	45 46 39,3	45 48 35,6	0 01 56,3
24	β Andromedæ..	55 21 15	0 36,7	34 40 53,2	6,8	11,0	55 20 38,3 N.	34 39 21,7	34 41 11	0 01 49,3
	δ Cassiopeiæ...	30 44 22,5	1 29,7	59 18 39,0	7,1	17,0	30 42 52,8	59 17 07,2	59 19 03,1	0 01 55,9
					−					
	Archernar....	31 51 22,5 S.	1 25,2	58 08 16,5 S.	7,4	16,1	31 49 57,3 S.	58 10 02,7 N.	58 08 25,2 S.	0 01 37,5
					+					
	γ Andromedæ..	48 33 40 N.	0 46,4	41 28 41 N.	7,7	11,8	48 32 53,6 N.	41 27 06,4 S.	41 29 00,5 N.	0 01 54,1
	γ Persei.....	37 14 17,5	1 10,1	52 48 25,6	8,1	12,2	37 13 07,4	52 46 52,6	52 48 45,9	0 01 53,3
	β Persei.....	49 46 15	0 45,2	40 16 06,2	8,1	9,6	49 45 29,8	40 14 30,2	40 16 23,9	0 01 53,7
	α Persei.....	40 48 13,7	1 01,3	49 13 22,4	8,2	9	40 48 13,7	49 11 46,3	49 13 39,6	0 01 53,3
					−					
1823 Jan. 1	Archernar ...	31 51 22,5 S.	1 25,2	58 08 15,2 S.	7,4	17,3	31 49 57,3 S.	58 10 02,7 N.	58 08 25,1 S.	0 01 37,6
					+					
	γ Andromedæ..	48 33 43 N.	0 46,4	41 28 41,3 N.	7,7	11,5	48 32 56,6 N.	41 27 03,4 S.	41 29 00,5 N.	0 01 57,1
	γ Persei.....	37 14 23	1 10,1	52 46 26,6	8,1	12,2	37 13 12,9	52 46 47,1	52 48 46,9	0 01 59,8
	β Persei.....	49 46 23	0 45,2	40 16 06,6	8,1	9,7	49 45 37,8	40 14 22,2	40 16 24,4	0 02 02,2
	α Persei	40 49 08	0 59	49 13 22,7	8,1	9,1	40 48 06,7	49 11 53,3	49 13 39,9	0 01 46,6
	δ Persei	42 49 35,5	0 57,3	47 12 55	8,1	9,9	42 48 38,2	47 11 21,8	47 13 13	0 01 51,2
	ζ Persei.....	58 41 15,5	0 32	31 21 09,4	7,4	6,1	58 40 43,5	31 19 16,5	31 21 22,9	0 02 06,4
	Capella.....	44 14 15,5	0 54,3	*			44 13 21,2	45 46 38,8	45 48 36,6	0 01 57,8
	β Tauri.....	61 35 15,5	0 29	*			61 34 46,5	28 25 13,5	28 27 03,3	0 01 49,8
					−					
	α Columbæ	55 48 50,5	0 35,6	34 10 27,2 S.	6,6	4,4	55 48 14,9 S.	34 11 45,1 N	34 10 25,2 S	0 01 20,9
					−	+				
	ζ Canis Maj....	59 59 28 S.	0 31,2	29 59 22	5,6	4,1	59 58 56,8	30 01 03,2	29 59 20,5	0 01 42,7
2	Capella	44 13 26,2 N.	0 54,3	*			44 13 26,2 N.	45 46 33,8 S	45 48 36,7 N.	0 02 02,9
	β Tauri.....	61 35 23	0 29	*			61 34 54	28 25 06	28 27 04,2	0 01 58,2
					−					
4	Archernar....	31 51 20,5 S.	1 25,2	58 08 16,1	7,4	17,5	31 49 55,3 S	58 10 04,7 N.	58 08 26,2 S	0 01 38,5
					+					
	γ Andromedæ..	48 33 55,5 N.	0 46,4	41 28 39,6 N.	8,1	12,8	48 33 09,1 N	41 26 50,9 S	41 29 00,5 N.	0 02 09,6
7	α Persei.....	40 49 03	1 01,3	49 13 22,8	8,1	9,1	40 48 01,7	49 11 58,3 N.	49 13 40 S.	0 01 41,7
	δ Persei	42 49 50,5	0 57,3	47 12 59,0	8	7,6	42 48 53,2	47 11 06,8 S.	47 13 14,6 N	0 02 07,8
	Capella.....	44 14 15,5	0 54,3	*			44 13 21,2	45 46 38,8	45 48 37,5	0 01 58,7
	β Tauri.....	61 35 13	0 29	*			61 34 44	28 25 16	28 27 04,3	0 01 48,3
					−					
	α Columbæ....	55 48 43,0 S.	0 35,6	34 10 28,6 S	6,6	4,4	55 48 07,4 S.	34 11 52,7 N.	34 10 26,4 S	0 01 26,2
	ζ Canis Maj....	59 59 23	0 31,2	29 59 20,5	5,6	4,1	59 58 51,8	30 01 08,2	29 59 19	0 01 49,2
						+				
	Canopus.....	37 23 23	1 10,6	52 36 13,2	5,4	4,3	37 22 12,4	52 37 47,6	52 36 12,1	0 01 35,5
					+					
8	γ Andromedæ..	48 34 00,5 N.	0 46,4	41 28 41,4 N	7,7	11,5	48 33 14,1 N.	41 26 45,9	41 29 00,6 N.	0 02 14,7
	α Arietis.....	67 24 40,5	0 21,8	*			67 24 18,7	22 35 41,3 S.	22 37 31	0 01 49,7
	γ Persei.....	37 14 23	1 10,1	52 48 26,2	8,1	12,8	37 13 12,9	52 46 47,1	52 48 47,1	0 02 00
	β Persei.....	49 46 20,5	0 45,2	40 16 06,9	8,1	9,8	49 45 35,3	40 14 24,7	40 16 24,8	0 02 00,1
	α Persei	40 49 15,5	1 01,3	49 13 23,0	8,1	9,1	40 48 14,2	49 11 45,8	49 13 40,2	0 01 54,4
	δ Persei.....	42 49 53	0 57,3	47 12 54,6	8,1	10,6	42 48 55,7	47 11 04,3	47 13 12,3	0 02 08
	ζ Persei.....	58 41 23	0 32	31 21 19,7	7,4	6,0	58 40 51	31 19 09	31 21 23,1	0 02 14,1

1823 Month.	Stars.	Meridian Altitude.	Corrected Refraction.	Mean Declination.	Nutation.	Aberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude North.
		° ′ ″	′ ″	° ′ ″	″		° ′ ″	° ′ ″	° ′ ″	° ′ ″
			—		+	+				
Jan. 8	ε Persei	50 33 05,5 N	0 43,8	39 29 34,7 N.	8,0	7,8	50 32 21,7 N.	39 27 38,3 S.	39 29 50,5 N.	0 02 12,2
	Capella	44 14 18	0 54,3	*			44 13 23,7	45 46 36,3	45 48 37,6	0 02 01,3
	β Tauri	61 35 10,5	0 29	*			61 34 51,5	28 25 08,5	28 27 03,5	0 01 55
					—					
	β Columbæ	54 08 33 S.	0 38,3	35 50 46,0 S.	6,3	6,0	54 07 54,7 S.	35 52 05,3 N.	35 50 45,7 S.	0 01 19,6
	ζ Canis Maj.	59 59 18	0 31,2	29 59 20,5	5,6	4,1	59 58 46,8	30 01 13,2	29 59 19	0 01 54,2
	Canopus	37 23 18	1 10,6	52 36 13,3	5,4	4,3	37 22 07,4	52 37 52,6	52 36 12,2 N.	0 01 40,4
					+					
9	γ Andromedæ	48 33 58 N	0 46,4	41 28 41,4 N.	7,7	11,5	48 33 11,6 N.	41 26 48,4 S.	41 29 00,6	0 02 12,2
	γ Persei	37 14 13	1 10,1	52 48 26,3	8,1	12,8	37 13 02,9	52 46 57,1	52 48 47,2	0 01 50,1
	β Persei	49 46 18	0 45,2	40 16 06,9	8,1	9,8	49 45 32,8	40 14 27,2	40 16 24,8	0 01 57,6
10	β Persei	49 46 13	0 45,2	40 16 06,8	8,1	9,8	49 45 27,8	40 14 32,2	40 16 24,7	0 01 52,5
	δ Persei	42 49 48	0 57,3	47 12 53,7	8,1	10,6	42 48 50,7	47 11 09,3	47 13 12,4	0 02 03,1
	ε Persei	50 33 03	0 43,8	39 29 34,6	8,0	7,8	50 32 19,2	39 27 40,8	39 29 50,4	0 02 10,6
	Capella	44 14 25,5	0 54,3	*			44 13 31,2	45 46 28,8	45 48 37,9	0 02 09,1
	β Tauri	61 35 18	0 29	*			61 34 49	28 25 11	28 27 03,6	0 01 52,6
17	β Persei	49 46 13	0 45,2	40 16 08,0	8,1	9,4	49 45 27,8	40 14 32,2	40 16 25,5	0 01 53,3
19	α Persei	40 49 18	1 01,3	49 13 22,7	8,1	9,1	40 48 16,7	49 11 43,3	49 13 39,9	0 01 56,6
20	Capella	44 14 06,5	0 54,3	*			44 13 12,2	45 45 53,5	45 48 39,1	0 01 51,3
21	γ Persei	37 14 14	1 10,1	52 48 26,8	8,1	16,5	37 13 03,9	52 46 56,1	52 48 51,4	0 01 55,3
	β Persei	49 46 16,5	0 45,2	40 16 08,1	8,1	9,4	49 45 31,3	40 14 28,7	40 16 25,6	0 01 56,9
	α Persei	40 49 19	1 01,3	49 13 24	8,1	8,5	40 48 17,7	49 11 42,3	49 13 40	0 01 57,7
	ζ Persei	58 41 19	0 32	31 21 10	8,0	5,7	58 40 47	31 19 13	31 21 23,7	0 02 10,1
	ε Persei	50 33 04	0 43,8	39 29 35,2	8,0	7,7	50 32 20,2	39 27 39,8	39 29 50,9	0 02 11,1
	Capella	44 14 11,5	0 54,3	*			44 13 17,2	45 46 42,8	45 48 39,2	0 01 56,4
	β Tauri	61 35 16,5	0 29	*			61 34 47,5	28 25 12,5	28 27 03,9	0 01 51,4
					—					
	ε Canis Maj	61 14 36,5 S	0 29,8	28 44 8,7 S.	4,5	6,2	61 14 06,7 S	28 45 53,3 N.	28 44 10,4 S	0 01 42,9
25	Capella	44 14 06,5 N	0 54,3	*			44 13 12,2 N	45 46 47,8 S.	45 48 39,5	0 01 51,7
	β Tauri	61 35 16,5	0 29,0	*			61 34 47,5	28 25 12,5	28 27 04 N	0 01 51,5
					—					
	ε Canis Maj.	61 14 26,5 S.	0 29,8	28 44 09,2	4,4	6,4	61 13 56,7 S.	28 46 03,3 N.	28 44 11,2 S.	0 01 52,1
	δ Canis Maj.	63 51 39	0 25,7	26 07 03,6	4,1	6,7	63 51 03,3	26 08 56,7	26 07 06,2	0 01 50,5
	π Navis	53 11 51,5	0 39,5	36 46 54	3,8	6,8	53 11 12	36 48 48	36 46 57	0 01 51
	η Canis Maj.	61 01 11,5	0 29,8	28 57 45,1	3,6	6,3	61 00 41,7	28 59 18,3	28 57 47,8 N	0 01 30,5
					+					
27	α Persei	40 49 16,5 N.	1 01,3	49 13 12,7 N.	8,1	8,4	40 48 15,2 N.	49 11 44,8 S.	49 13 39,2	0 01 54,4
	ζ Persei	58 41 11,5	0 32	31 21 10,1	8,0	5,7	58 40 39,5	31 19 20,5	31 21 23,8	0 02 03,3
	δ Persei	42 49 51,5	0 57,3	47 12 54,9	8,0	10,4	42 48 54,2	47 11 05,8	47 13 13,3	0 02 07,5
	Capella	44 14 11,5	0 54,3	*			44 13 17,2	45 46 42,8	45 48 39,5	0 01 56,7
	β Tauri	61 35 09	0 29	*			61 34 40	28 25 20	28 27 04	0 01 44
					—					
	α Columbæ	55 48 41,5 S.	0 35,6	34 10 26,9 S.	6,5	9,8	55 48 05,9 S.	34 11 54,1 N.	34 10 30,2 S.	0 01 23,9
	β Columbæ	54 08 24	0 38,3	35 50 45,9	6,1	11,0	54 07 45,7	35 52 14,3	35 50 50,8	0 01 23,5
	ζ Canis Maj.	59 59 19	0 31,2	29 59 20,6	5,5	9,3	59 58 47,8	30 01 12,2	29 59 24,4	0 01 47,8
	Canopus	37 23 14	1 10,6	52 36 13,3	5,3	10,6	37 22 03,4	52 37 56,6	52 36 18,6	0 01 38
	ε Canis Maj.	61 14 41,5	0 29,8	28 44 08,9	4,4	7,1	61 14 11,7	28 45 48,3	28 44 11,6	0 01 36,7
	δ Canis Maj.	63 51 34	0 25,7	26 07 03,5	4,0	7,0	63 51 08,3	26 08 51,7	26 07 06,5	0 01 45,2

1823 Month.	Starst.	Meridian Altitude	Corrected Refraction.	Mean Declination.	Nutation.	Aberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude North.
		° ′ ″	′ ″	° ′ ″	″	″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
			—		—	+				
Jan. 27	π Navis.....	53 11 49 s.	0 39,5	34 46 54,1 s.	3,8	7,5	53 11 09,5	36 48 50,5 N.	36 46 57,8 s.	0 01 52,7
	ψ Canis Maj....	61 00 59	0 29,8	28 57 45,3	3,5	6,3	61 00 29,2	28 59 30,8	28 57 48,1	0 01 41,7
Feb. 6	ζ Canis Maj....	59 59 13	0 31,6	29 59 20,8	5,4	11,0	59 58 41,8	30 01 18,2	29 59 26,4	0 01 51,8
	Canopus.....	37 23 11	1 10,6	52 36 12,9	5,2	13,1	37 22 0,4	52 37 59,6	52 36 20,8	0 01 38,8
	ε Canis Maj....	61 14 46,5	0 29,8	28 44 08,9	4,3	10,0	61 14 16,7	28 45 43,3	28 44 14,6	0 01 28,7
	π Navis.....	53 11 56,5	0 39,5	36 46 54,3	3,6	9,9	53 11 17,0	36 48 43	36 47 00,6	0 01 42,4
	Castor.....	57 46 14 N.	0 33,3	*			57 45 40,8 N.	32 14 19,2 s.	32 16 04,3 N	0 01 45,1
	Pollux.....	61 35 29	0 28,8	*			61 35 00,2	28 24 59,8	28 26 43,7	0 01 43,9
8	Capella.....	44 14 17,5	0 54,3	*			44 13 23,2	45 46 36,8	45 48 39,7	0 02 02,9
	β Tauri.....	61 35 15	0 29	*			61 34 46	28 25 14	28 27 04,3	0 01 50,3
	ζ Canis Maj....	59 59 20 s.	0 31,2	29 59 22,8	— 5,4	+ 11,8	59 58 48,8 s.	30 01 11,2	29 59 29,2 s.	0 01 42
	Canopus.....	37 23 15	1 10,6	52 36 14 3	5,2	14,8	37 22 04,4	52 37 55,6 N.	52 36 23	0 01 32,6
	θ Navis.....	46 56 12,5	0 49,4	43 02 36,6	5,4	13,7	46 55 23,1	43 04 36,9	43 02 44,9	0 01 52
	ε Canis Maj....	61 14 45	0 29,8	28 44 19,3	4,3	10,0	61 14 15,2	28 45 44,8	28 44 15,0	0 01 29,8
	δ Canis Maj....	63 51 37,5	0 25,7	26 07 03,8	4,0	9,7	63 51 11,8	26 08 48,2	26 07 09,5	0 01 38,7
	ψ Canis Maj....	61 01 07,5	0 29,8	28 57 45,3	3,5	10,4	61 00 37,7	28 59 22,3	28 57 52,3	0 01 30
	Castor.....	57 46 27,5 N.	0 33,2	*			57 45 54,3 N.	32 14 05,7 s.	32 16 04,4 N.	0 01 58,7
	Pollux.....	61 35 42,5	0 28,8	*			61 35 13,7	28 24 46,3	28 26 43,7	0 01 57,4
	ζ Navis.....	50 28 15 s.	0 43,9	39 30 29,3 s.	+ 2,2	7,1	50 27 31,1 s.	39 32 28,9 N.	39 30 38,6 s.	0 01 50,3
9	Capella.....	44 14 11 N.	0 54,3	*			44 13 16,7 N	45 46 43,3 s.	45 48 40,7 N	0 01 57,4
	β Tauri.....	61 35 21	0 29	*			61 34 52	28 25 08	28 27 04,3	0 01 56,3
	α Columbæ	55 48 38,5 s.	0 35,6	34 10 31, 8	— 6,6	+ 6,5	55 48 02,9 s.	34 11 57,1 N	34 10 31,7 s.	0 01 25,4
	β Aurigæ.....	45 07 36 N	0 53,4	44 55 16,3 N	+ 6,1	+ 6,7	45 06 42,6 N	44 53 17,4 s.	44 55 29,1 N.	0 02 12,7
	ζ Canis Maj...	59 59 20 s.	0 31,2	29 59 22,8 s.	— 5,3	+ 11,9	59 58 49,8 s.	30 01 10,2 N.	29 59 29,4 s.	0 01 40,8
	Canopus.....	37 23 08,5	1 10,6	52 36 13,3	5,1	14,9	37 21 57,9	52 38 02,1	52 36 23,1	0 01 39
	θ Navis.....	46 56 16	0 49,4	43 02 36,7	5,4	13,7	46 55 26,6	43 04 33,4	43 02 45	0 01 48,4
	ε Canis Maj....	61 14 36	0 29,8	28 44 08,4	4,3	11,1	61 14 06,2	28 45 53,8	28 44 15,2	0 01 38,6
	δ Canis Maj....	63 51 41	0 25,7	26 07 04,0	4,0	9,7	63 51 15,3	26 08 44,7	26 07 09,7	0 01 35
	ψ Canis Maj....	61 01 06	0 29,8	28 57 45,4	3,5	10.5	61 00 36,2	28 59 23,8	28 57 52,4	0 01 31,4
	Castor.....	57 46 33,5 N.	0 33,2	*	+	+	57 46 00,3 N	32 13 59,7	32 16 04,5 N	0 02 04,8
	Pollux.....	61 35 41	0 28,8	*			61 35 12,2	28 24 47,8 s.	28 26 43,8	0 01 56
	ζ Navis.....	50 28 16 s.	0 43,9	39 30 30,0	2,2	7,3	50 27 32,1 s.	39 32 27,9 N	39 30 39,5 s.	0 01 48,4
	γ Navis.....	43 09 58,5	0 56,8	46 49 01,5	— 1,9	+ 8,8	43 09 01,7	46 50 58,3	46 49 08,4	0 01 49,9
	δ Navis.....	35 55 36	1 12,8	54 03 34,9	0,7	6,8	35 54 23,2	54 05 36,8	54 03 41	0 01 55,8
	ι Ursæ Maj. ..	41 18 56 N.	0 59,9	48 44 08,3 N	+ 6,5	— 4,5	41 17 56,1 N.	48 42 03,9 s.	48 44 04,3 N	0 02 00,4
10	α Columbæ	55 48 40 s.	0 35,6	34 10 26,1 s.	— 6,3	+ 12	55 48 04,4 s.	34 11 55,6 N.	34 10 31,8 s.	0 01 23,8
	β Aurigæ.....	45 07 27,5 N.	0 53,4	44 55 16,3 N	+ 6,1	+ 6,7	45 06 34,1 N.	44 53 25,9 s.	44 55 29,1 N.	0 02 03,2
	ζ Canis Maj....	59 59 25 s.	0 31,2	29 59 23 s.	— 5,3	+ 11,9	59 58 53,8 s.	30 01 06,2 N.	29 59 29,6 s.	0 01 36,6
	Canopus.....	37 23 10	1 10,6	52 36 13,4	5,1	15,0	37 21 59,4	52 38 00,6	52 36 23,3	0 01 37,3
	θ Navis.....	46 56 10	0 49,4	43 02 36,8	5,3	13,8	46 55 20,6	43 04 39,4	43 02 45,3	0 01 54,1
	ε Canis Maj....	61 14 35	0 29,8	28 44 08,5	4,3	11,2	61 14 05,2 N.	28 45 54,8	28 44 15,4	0 01 39,4

1823 Month.	Stars.	Meridian Altitude.	Corrected Refraction.	Mean Declination.	Nutation.	Aberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude North.
		° ′ ″	′ ″ —	° ′ ″	″ —	+	° ′ ″	° ′ ″	° ′ ″	° ′ ″
Feb.10	δ Canis Maj. ...	63 51 46 s.	0 25,7	26 07 03,9 s.	4,0	10	63 51 20,3 s.	26 08 39,7 N.	26 07 09,9 s	0 01 29,8
	Castor.....	57 46 27,5 N.	0 33,2	*			57 45 54,3 N.	32 14 05,7 s.	32 16 04,4 N.	0 01 58,7
	Pollux.....	61 35 42,5	0 28,8	*			61 35 13,7	28 24 46,3	28 26 43,9	0 01 57,6
	ζ Navis.....	50 28 17,5 s.	0 43,9	39 30 34,6	− 2,2	+ 8,0	50 27 33,6 s.	39 32 26,4 N.	39 30 40,4 s.	0 01 46
	γ Navis.....	43 09 52,5	0 56,8	46 49 01,5	1,9	8,8	43 08 55,7	46 51 04,3	46 49 08,4	0 01 55,9
11	Capella.....	44 14 05 N.	0 54,3	*	+	+	44 13 10,7 N.	45 46 49,3 s.	45 48 40,8 N.	0 01 51,5
	β Auriga.....	45 07 27,5	0 53,4	44 55 16,3 N.	6,1	6,7	45 06 34,1	44 53 25,9	44 55 29,1	0 02 04,2
	ζ Canis Maj...	59 59 22,5 s.	0 31,2	29 59 22,7 s.	− 5,3	12,4	59 58 51,3 s.	30 01 08,7 N.	29 59 29,8 s.	0 01 38,9
	Canopus.....	37 23 10	1 10,6	52 36 13,6	5,1	15,1	37 21 59,4	52 38 00,6	52 36 23,6	0 01 37,0
	ε Canis Maj...	61 14 37,5	0 29,8	28 44 08,7	4,3	11,2	61 14 07,7	28 45 52,3	28 44 15,6	0 01 36,7
	δ Canis Maj...	63 51 45	0 25,7	26 07 14,1	4	10	63 51 19,3	26 08 40,7	26 07 10,1	0 01 30,6
	Castor	57 46 27,5 N.	0 33,2	*	−	−	57 45 54,3 N.	32 14 05,7 s.	32 16 04,4 N.	0 01 58,7
	Pollux	61 35 42,5	0 28,8	*			61 35 13,7	28 24 46,3	28 26 44	0 01 57,7
	ζ Navis.....	50 28 20 s.	0 43,9	39 30 28,7	2,2	10,4	50 27 36,1 s.	39 32 23,9 N	39 30 41,3 s.	0 01 42,6
	γ Navis	43 10 02,5	0 56,8	46 49 01,2	− 1,9	+ 8,8	43 09 05,7	46 50 54,3	46 49 08,1	0 01 46,2
	δ Navis	35 55 35	1 12,8	54 03 35,8	0,7	6,6	34 54 22,2	54 05 37,8	54 03 41,7	0 01 56,1
12	Capella	44 14 03 N.	0 54.3	*	+	+	44 13 08,7 N.	45 46 51,3 s	45 48 40,8 N.	0 01 49,5
	β Tauri.....	61 35 33	0 29	*			61 35 04	28 24 56	28 27 04,3	0 02 08,3
	β Auriga.....	45 07 35,5	0 53,4	44 55 16,4 N.	6,1	6,7	45 06 42,1	44 53 17,9	44 55 29,2	0 02 11,3
	ζ Canis Maj ..	59 59 18 s	0 31,2	29 59 22,9 s.	− 5,3	+ 12,4	59 58 46,8 s.	30 01 13,2 N.	29 59 30 s.	0 01 43,2
	Canopus.....	37 23 05,5	1 10,6	52 36 13,7	5,1	15,2	37 21 54,9	52 38 05,0	52 36 23,8	0 01 41,2
	θ Navis	46 56 08	0 49,4	43 02 36,6	5,3	14,5	46 55 18,6	43 04 41,4	43 02 45,8	0 01 55,6
	Pollux.....	61 35 35,5 N.	0 28,8	*	+	+	61 35 06,7 N	28 24 53,3 s	28 26 44 N.	0 01 50,7
	ζ Navis.....	50 28 13 s.	0 43,9	39 30 29,4	2,2	10,5	50 27 29,1 s.	39 32 30,9 N	39 30 42,1 s.	0 01 58,8
	γ Navis.....	43 10 08	0 56,8	46 49 01,3	− 1,9	+ 8.8	43 09 11,2	46 50 48,8	46 49 08,2	0 01 40,6
	βNavis.	21 01 05,5	2 17	68 59 28,4	+ 0,5	+ 3,2	20 58 48,5	69 01 11,5	68 59 32,1	0 01 39,4
13	Capella.....	44 14 05,5 N	0 54,3	*			44 13 10,2 N.	45 46 49,8 s.	45 48 40,9 N.	0 01 51,1
	β Tauri.....	61 35 28	0 29	*			61 34 59	28 25 01	28 27 04,3	0 02 03,3
	ζ Canis Maj ..	59 59 20,5 s	0 31,2	29 59 22,7	− 5,3	+ 12,8	59 58 49,3 s.	30 01 10,7 N.	29 59 30,2 s.	0 01 40,5
	β Auriga.....	45 07 28 N	0 53,4	44 55 16,4 N.	+ 6,0	+ 6.8	45 06 34,6 N	44 53 25,4	44 55 29,2 N.	0 02 03,8
	Canopus	37 23 08 s	1 10,6	52 36 14 s.	− 5,1	+ 15,4	37 21 57,4 s	52 38 02,6	52 36 24,3 s.	0 01 38,3
	θ Navis	46 56 15,5	0 49,4	43 02 36	5,3	14,7	46 55 26,1	43 04 33,9	43 02 46,0	0 01 47,9
	ε Canis Maj ..	61 14 40,5	0 29,8	28 44 09	4,3	11,4	61 14 10,7	28 45 49,3	28 44 16,1	0 01 33,2
	δ Canis Maj ..	63 51 35,5	0 25,7	26 07 03,8	4,0	10,7	63 51 09,8	26 08 50,2	26 07 10,5	0 01 39,7
	π Navis.....	53 11 48	0 39,9	36 46 54,4	3,8	12,2	53 11 08,1	36 48 51,9	36 47 02,8	0 01 49,1
	Pollux.....	61 35 38 N	0 28,8	*	+	+	61 35 09,2 N.	28 24 50,8 s	28 26 44 N.	0 01 53,2
	ζ Navis.....	50 28 23 s	0 43,9	39 30 30,1	2,2	10,7	50 27 39,1 s.	39 32 20,9 N.	39 30 43 s.	0 01 37,9
	ι Ursæ Maj....	41 19 05,5 N.	0 59,9	48 44 08,1 N	+ 0,5	− 1,8	41 18 05,6 N.	48 41 54,4 s	48 44 06,8 N.	0 02 12,4
	λ Navis.....	47 15 33 s.	0 48,9	42 43 14,0 s.	+ 0,1	+ 6,4	47 14 44,1 s.	42 45 15,9 N.	42 43 20,4 s	0 01 55,5
	β Navis.....	21 01 00,5	2 17	68 59 28,5	0,5	3,2	20 58 43,5	69 01 16,5	68 59 32,2	0 01 44,3
	χ Navis	35 44 03	1 13,3	54 15 19,1	0,6	4,7	35 42 49,7	54 17 10,3	54 15 24,4	0 01 45,9
19	Canopus.....	37 23 10,5	1 10,6	52 36 13,5	− 5,1	16,1	37 21 59,9	52 38 00,1	52 36 24,5	0 01 35,6

1823 Month.	Stars.	Meridian Altitude.	Corrected Refraction.	Mean Declination.	Nutation.	Aberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude North.
		° ′ ″	′ ″ —	° ′ ″	″ —	+	° ′ ″	° ′ ″	° ′ ″	° ′ ″
Feb.20	ζ Canis Maj....	59 59 18 s.	0 31,2	29 59 19,4 s.	2,1	11,9	59 58 46,8 s.	30 01 13,2 N.	29 59 29,2 s.	0 01 44
	Canopus.....	37 23 05,5	1 10,6	52 36 13,6	5,1	16,5	37 21 54,9	52 38 05,1	52 36 24,8	0 01 40,3
	θ Navis.....	46 56 13	0 49,4	43 02 36,8	5,3	16,4	46 55 23,6	43 04 36,4	43 02 47,9	0 01 48,5
	ε Canis Maj....	61 14 35	0 29,8	28 44 08,6	2,4	12,5	61 14 05,2	28 45 54,8	28 44 18,7	0 01 36,1
	δ Canis Maj....	63 51 43	0 25,7	26 07 04,0	3,9	12,5	63 51 17,3	26 08 42,7	26 07 12,6	0 01 30,1
	π Navis.....	53 11 40,5	0 39,9	36 46 54,4	3,6	13,1	53 11 00,6	36 48 59,4	36 47 03,9	0 01 55,5
	η Canis Maj....	61 01 08	0 29,8	29 57 45,6	3,4	11,9	60 00 38,2	29 59 21,8	29 57 54,1	0 01 27,7
	Castor.....	57 46 35,5 N.	0 33,2	*			57 46 02,3 N.	32 13 57,7 s.	32 16 05,3 N.	0 02 07,6
	Pollux.....	61 35 40,5	0 28,8	*			61 35 11,7	28 24 48,3	28 26 44,4	0 01 56,1
23	Capella.....	44 14 08	0 54,3	*			44 13 13,7	45 46 46,3	45 48 41,1	0 01 54,8
	β Tauri.....	61 35 25,5	0 29	*			61 34 56,5	28 25 03,5	28 27 04,4	0 02 00,9
	α Columbæ	55 48 28 s.	0 35,6	34 10 26	5,1 — 16,1		55 47 52,4 s.	34 12 07,6 N.	34 10 37 s.	0 01 30,6
	β Aurigæ.....	45 07 20,5 N.	0 53,4	44 55 16,5 N.	6,0 — 7,0		45 06 27,1 N.	44 53 32,9 s.	44 55 29,5 N.	0 01 56,6
	Canopus.....	37 23 08 s.	1 10,6	52 36 13,4 s.	5,0 — 17,3		37 21 57,4 s.	52 38 02,6 N.	52 36 25,7 s.	0 01 36,9

Note. The Asterisks in the Column of "Mean Declination" are placed to shew, that the Declinations were taken from the Nautical Almanac; being there corrected for Nutation and Aberration.

Latitude. By the Sun—South of the Zenith.

1823 Month.	Limb.	Meridian Altitude.	Corrected Refraction.	Parallax.	Sun's Semi Diameter.	True Meridian Altitude of Sun's Centre.	Zenith Distance.	Declination.	Latitude North.
		° ′ ″	′ ″ —	′ ″ +	′ ″ +	° ′ ″	° ′ ″	° ′ ″	° ′ ″
Dec.23	L. L.....	66 14 52,5 s.	0 23	0 04	16 17,6	66 30 51,1 s.	23 29 08,9 N.	23 27 39,1 s.	0 01 29,8
24	L. L.....	66 15 40	0 22,5	0 04	16 17,7	66 31 39,2	23 28 20,8	23 27 00,7	0 01 20,1
25	L. L.....	66 16 27,5	0 22,9	0 04	16 17,7	66 32 26,3	23 27 33,7	23 25 52	0 01 41,7
26	L. L.....	66 18 16	0 23	0 04	16 17,7	66 34 14,7	23 25 45,3	23 24 16,6	0 01 28,7
27	L. L.....	66 20 13,5	0 22,8	0 04	16 17,7	66 36 12,4	23 23 47,6	23 22 12,8	0 01 34,8
30	L. L.....	66 29 13	0 23,3	0 04	16 17,8	66 45 11,5	23 14 48,5	23 13 12,5	0 01 36
31	L. L.....	66 33 05	0 22,8	0 04	16 17,8	66 49 04	23 10 56	23 09 16,8	0 01 39,2
1823 Jan. 1	L. L	66 37 35	0 22,3	0 04	16 17,8	66 53 34,5	23 06 25,5	23 04 52,1	0 01 33,4
2	L. L.....	66 42 20	0 22,6	0 04	16 17,8	66 58 19,2	23 01 40,8	23 00 01	0 01 39,8
6	L. L.....	67 06 21	0 22,3	0 04	16 17,7	67 22 20,4	22 37 39,6	22 36 02,2	0 01 37,4
8	L. L.....	67 20 58	0 22,3	0 04	16 17,7	67 36 57,4	22 23 02,6	22 21 21,1	0 01 41,5
9	L. L.....	67 29 00,5	0 22,0	0 04	16 17,6	67 45 00,1	22 14 59,9	22 13 20,3	0 01 39,6
10	L. L.....	67 37 23	0 21,9	0 04	16 17,5	67 53 22,6	22 06 37,4	22 04 53,4	0 01 44
11	L. L.....	67 46 23	0 21,8	0 04	16 17,5	68 02 22,7	21 57 37,3	21 56 00,5	0 01 36,8

Latitude of Pulo Gaunsah Lout:

By the Stars. (R.)

1822 Month.	Stars.	Meridian Altitude.	Corrected Refraction.	Mean Declination.	Nutation.	Aberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude North.
		° ′ ″	′ ″	° ′ ″	″	″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
			—		—	+				
Jan. 10	α Columbæ.....	55 48 25	35,6	34 10 26,31 s	6,99	3,88	55 47 49,4	34 12 10,6 N.	34 10 23,2 s.	00 1 47,4
20	Capella.....	44 14 35	54,73	*			44 13 40,27	45 46 19,73 s	45 48 39,1 N	00 2 19,37
22	Aldebaran...	73 53 45	15,07	*			73 53 29,93	16 6 30,07	16 8 51,51	00 2 21,44
	Sirius.....	73 30 00	15,35	*			73 29 44,65	16 30 15,3	16 28 45,8 s	00 1 29,5
25	Capella.....	44 14 45	54,81	*			44 13 50,19	45 46 9,8	45 48 39,55	00 2 29,74
27	Canopus.....	37 23 52,5	69,04	52 36 13,31	5,19	7,01	37 22 43,46	52 37 16,54 N	52 36 1,11	00 1 15,43
	Sirius.....	73 29 52,5	15,23	*			73 29 37,27	16 30 22,7	16 28 46,8	00 1 35,9
Feb. 6	Canopus.....	37 23 34,7	70,69	52 36 13,36	5,07	8,02	37 22 24,01	52 37 36,99	52 36 00,27	00 1 36,72
	ε Canis Maj...	61 15 19,7	29,77	28 44 8,82	4,26	2,56	61 14 48,5	28 45 11,5 s.	28 44 2	00 1 9,5
8	Aldebaran...	73 53 42,5	14,97	*			73 53 27,53	16 6 32,47	16 8 52,32 N	00 2 19,76
	Capella.....	44 14 49,53	54,73	*			44 13 54,8	45 46 5,2	45 48 40,6	00 2 35,4
	Canopus.....	37 23 34,53	79,07	52 36 13,37	5,07	8,17	37 22 24,46	52 37 35,54 N	52 36 00,13 s	00 1 35,41
	ε Canis Maj....	61 15 4,53	29,7	28 44 8,84	4,25	2,55	61 14 34,83	28 45 25,17	28 44 2,04	00 1 23,13
	δ Canis Maj...	63 52 9,53	26,19	26 7 1,85	3,89	2,17	63 51 43,34	26 8 16,66	26 6 55,19	00 1 21,47
	η Canis Maj...	61 1 29,53	29,94	28 57 44,02	3,37	3,18	61 00 59,69	28 59 00,41	28 57 37,47	00 1 22,94
	Castor.....	57 46 39,53	33,21	*			57 46 6,32	32 13 53,68 s	32 16 4,43 N	00 2 10,75
	Pollux.....	61 36 19,53	29	*			61 35 50,53	28 24 9,47	28 26 43,7	00 2 34,23
9	Capella.....	44 13 47,39	54,63	*			44 13 47,39	45 46 12,61	45 48 40,7	00 2 28,1
	Pollux.....	61 35 39,53	28,95	*			61 35 39,53	28 24 49,4	28 26 43,8	00 1 54,4
10	Canopus.....	37 22 38,26	69,54	52 36 13,38 N	4,97	8,39	37 22 38,26	52 37 21,74 N	52 36 00,02 s	00 1 21,72
11	Capella.....	44 14 15,4	53,01	*			44 13 22,39	45 46 37,61 s	45 48 46,78 N	00 2 3,17
	Canopus.....	37 23 32,9	69,5	52 36 13,39 s	4,97	8,66	37 22 23,34	52 37 36,66 N	52 35 59,76 s	00 1 36,9
	ε Canis Maj....	61 14 30,4	29,53	28 44 8,89	4,18	2,50	61 14 00,87	28 45 59,13	28 44 2,19	00 1 56,94
12	Capella.....	44 14 33,33	54,08	*			44 13 39,25	15 46 20,7 s.	15 48 40,8 N	00 2 20,1
	β Tauri.....	61 35 23,33	28,66	*			61 34 54,67	28 25 5,33	28 27 4,35	00 1 59,02
	Canopus.....	37 23 40,83	69,15	52 36 13,38	4,95	8,52	37 22 31,33	52 37 28,67 N	52 35 58,91 s	00 1 29,76
14	Canopus.....	37 23 45,83	69,31	52 36 13,38	4,95	8,6	37 23 45,83	52 37 23,48	52 35 59,83	00 1 23,65
	Pollux.....	61 36 10	28,72	*			61 35 41,2	28 24 18,8 s.	28 26 44,05 N	00 2 25,25
20	Canopus.....	37 23 2,5	69,75	52 36 13,39	4,95	9,33	37 21 52,75	52 38 7,25 N	52 36 27,67 s	00 1 39,58
23	β Tauri.....	61 35 30	29,2	*			61 35 00,8	28 24 59,2 s.	28 27 4,35 N	00 2 5,15
Mar. 13	Castor.....	57 46 51,25	32,99	*			57 46 18 26	32 13 41,74	32 16 6,6	00 2 24,86
	Pollux.....	61 35 38,75	28,81	*			61 35 9,94	28 24 50,06	28 26 45,5	00 1 55,4

Latitude.

By the Sun---South of the Zenith. (R)

1823 Month.	Limb.	Meridian Altitude.	Corrected Refraction.	Parallax.	Sun's Semi Diameter.	True Meridian Altitude of	Zenith Distance.	Corrected Declination.	Latitude North.
		° ′ ″	″	+ ″	′ − ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
Jan. 11	U.L.....	68 18 47,2	20,95	3,2	16 17,5	68 2 11,95	21 57 48,05 N	21 56 00,5 S	00 1 47,55
21	U.L.....	70 10 40	18,9	3	16 16,7	69 54 7,4	20 5 52,6	20 4 31,05	00 1 21,55
24	U.L.....	70 51 7,5	17,58	2,8	16 16,4	70 34 36,3	19 25 23,7	19 23 31,2	00 1 52,5
27	L.L.....	71 3 00	17,53	2,8	+ 16 16,1 −	71 19 1,37	18 40 58,63	18 39 19,5	00 1 39,13
28	U.L.....	71 50 52,5	16,69	2,6	16 15,9	71 34 22,5	18 25 37,5	18 23 54,7	00 1 42,8
29	U.L.....	72 7 7,5	16,44	2,6	16 15,8	71 50 37,8	18 9 22,2	18 8 10,2	00 1 12,0
30	U.L.....	72 22 33,75	16,15	2,53	16 15,6	72 6 4,53	17 53 55,47	17 52 5,7	00 1 49,77
31	L.L.....	72 6 51,25	16,34	2,6	+ 16 15,5	72 22 53	17 37 7	17 35 41,9	00 1 25,1
Feb. 5	L.L.....	73 33 7,2	16	2,2	16 14,7	73 49 8,1	16 10 51,9	16 9 11,4	00 1 40,5
8	U.L.....	75 1 10	13,85	2	− 16 14,1	74 44 44,15	15 15 15,85	15 13 52,6	00 1 23,25
9	U.L.....	75 19 47,5	13,62	2	16 4	75 3 21,88	14 56 38,12	14 54 55,05	00 1 43,07

Results of the Observations

for the

Latitude of Pulo Gaunsah Leut (L.)

By the Northern Stars.		*By the Southern Stars, and Sun South of the Zenith.*	
	° ′ ″		° ′ ″
γ Andromedæ.....	0 01 54,1 N.	Archernar.....	0 01 37,5 N.
	0 01 57,1		0 01 37,5
	0 02 09,6		0 01 37,6
	0 02 14,7		0 01 38,5
	0 02 12,2	α Columbæ.....	0 01 26,2
β Andromedæ	0 01 49,3		0 01 20,9
δ Cassiopeiæ.....	0 01 55,9		0 01 23,9
α Arietis.....	0 01 49,7		0 01 25,4
γ Persei	0 01 53,3		0 01 23,8
	0 01 59,8	β Columbæ.....	0 01 19,6
	0 02 00		0 01 23,5
	0 01 50,1	ζ Canis Maj.....	0 01 42,7
	0 01 55,3		0 01 49,2
β Persei.....	0 01 53,7		0 01 54,2
	0 01 53,7		0 01 47,8
	0 02 02,2		0 01 51,8
	0 02 00,1		0 01 42
	0 01 57,6		0 01 40,8
	0 01 52,5		0 01 36,6
	0 01 53,3		9 01 38,9
	0 01 56,9		0 01 43,2
α Persei	0 01 53,3		0 01 40,5
	0 01 46,6		0 01 44
	0 01 41,7	δ Canis Maj.....	0 01 50,5
	0 01 54,4		0 01 45,2
	0 01 56,6		0 01 38,7
	0 01 57,7		0 01 35
	0 01 54,4		0 01 29,8
ζ Persei.....	0 02 06,4		0 01 30,6
	0 02 14,1		0 01 39,7
	0 02 10,1		0 01 30,1
	0 02 03,3	β Navis.....	0 01 39,4
δ Persei	0 01 51,2		0 01 44,3
	0 02 07,8	Canopus	0 01 35,5
	0 02 08		0 01 40,4
	0 02 03,1		0 01 38
	0 02 07,5		0 01 38,8
ε Persei.....	0 02 12,2		0 01 32,6
	0 02 10,6		0 01 39

By the Northern Stars.		*By the Southern Stars, and Sun South of the Zenith.*	
	° ′ ″		° ′ ″
ε Persei	0 02 11,1	Canopus	0 01 37,3
Capella	0 01 56,3		0 01 37
	0 01 57,8		0 01 41,2
	0 02 02,9		0 01 38,3
	0 01 58,7		0 01 35,6
	0 02 01,3		0 01 36,9
	0 02 09,1	ε Canis Maj	0 01 42,9
	0 01 51,3		0 01 52,1
	0 01 56,4		0 01 36,7
	0 01 51,7		0 01 28,7
	0 01 56,7		0 01 29,8
	0 02 02,9		0 01 38,6
	0 01 57,4		0 01 39,4
	0 01 51,5		0 01 36,7
	0 01 49,5		0 01 33,2
	0 01 51,1		0 01 36,1
	0 01 54,8	η Canis Maj	0 01 30,5
β Tauri	0 01 49,8		0 01 41,7
	0 01 58,2		0 01 30
	0 01 48,3		0 01 31,4
	0 01 55		0 01 27,7
	0 01 52,6	δ Navis	0 01 55,8
	0 01 51,4		0 01 56,1
	0 01 51,5	π Navis	0 01 51
	0 01 44		0 01 52,7
	0 01 50,3		0 01 42,4
	0 01 56,3		0 01 49,1
	0 02 08,3		0 01 55,1
	0 02 03,3	θ Navis	0 01 52
	0 02 00,9		0 01 48,4
β Aurigæ	0 02 12,7		0 01 54,1
	0 02 03,2		0 01 55,6
	0 02 04,2		0 01 47,9
	0 02 11,3		0 01 48,5
	0 02 03,8	λ Navis	0 01 55,5
	0 01 56,6	χ Navis	0 01 45,9
Pollux	0 01 43,9	Sun	0 01 29,8
	0 01 57,4		0 01 20,1
	0 01 56		0 01 41,7
	0 01 57,6		0 01 28,7
	0 01 57,7		0 01 34,8
	0 01 50,7		0 01 36
	0 01 53,2		0 01 39,2
	0 01 56,1		0 01 33,4

By the Northern Stars.		*By the Southern Stars, and Sun South of the Zenith.*	
	° ′ ″		° ′ ″
Castor.....	0 01 45,1	Sun.....	0 01 39,8
	0 01 58,7	”	0 01 37,4
	0 02 04,8	”	0 01 41,5
	0 01 58,7	”	0 01 39,6
	0 01 58,7	”	0 01 44
	0 02 07,6	”	0 01 36,8
Ursæ Maj.....	0 02 00,4		
	0 02 12,4		
Mean....	0 01 58,37	Mean....	0 1 39,19

° ′ ″

Latitude of PULO GAUNSAH LOUT by the Northern Stars.... 0 1 58,37 N.

do. do. Southern Stars.... 0 1 39,19

Mean..... 0 1 48.78 N.

By combining the Assistant *Robinson's* Observations with these, in the manner the whole (223 Results) would have been combined, if taken by one Observer, we get 1′: 49,4″ for the Latitude of *Pulo Gaunsah Lout*—differing only 0,62 from the above Result, which I have preferred however, as *Lawrence's* Observations are very numerous, and so good, that very few indeed were rejected on account of their Results differing from the Mean. This was not the case with *Robinson's* Observations; the Latitude by those of his not rejected, differs, however, only about 6 seconds from that above.

Results. (R.)

By the Northern Stars.

	°	'	"	
Capella	0	2	19,37	N.
Capella	0	2	29,74	
Aldebaran	0	2	21,44	
Aldebaran	0	2	19,76	
Capella	0	2	35,4	
Castor	0	2	10,75	
Pollux	0	2	34,23	
Capella	0	2	28,1	
Pollux	0	1	54,4	
Capella	0	2	3,17	
Capella	0	2	20,1	
β Tauri	0	1	59,02	
Pollux	0	2	25,25	
β Tauri	0	2	5,15	
Castor	0	2	24,86	
Pollux	0	1	55,4	
Mean..	0	2	16,6	

By the Southern Stars, and Sun South of the Zenith.

	°	'	"	
α Columbæ	0	1	47,4	N.
Sirius	0	1	29,5	
Canopus	0	1	15,43	
Sirius	0	1	35,9	
Canopus	0	1	36,72	
ε Canis Maj	0	1	9,5	
Canopus	0	1	35,41	
δ Canis Maj	0	1	21,47	
ε Canis Maj	0	1	23,13	
η Canis Maj	0	1	22,94	
Canopus	0	1	21,72	
Canopus	0	1	36,9	
ε Canis Maj	0	1	56,94	
Canopus	0	1	29,76	
Canopus	0	1	23,65	
Canopus	0	1	39,58	
Sun	0	1	47,55	
,,	0	1	21,55	
,,	0	1	52,5	
,,	0	1	39,13	
,,	0	1	42,8	
,,	0	1	12	
,,	0	1	49,77	
,,	0	1	25,1	
,,	0	1	40,5	
,,	0	1	23,25	
,,	0	1	43,07	
Mean..	0	1	32,7	

	°	'	"	
Latitude of Pulo Gaunsam Lout by the Northern Stars....	0	2	16,6	
do do Southern Stars....	0	1	32,7	
Mean.....	0	1	54 6	N.

RESULTS OF THE OBSERVATIONS.

At PULO GAUNSAH LOUT.

For the TIME, LONGITUDE, and RATES of the CHRONOMETERS (L.)

1822	TIMES BY CHRONOMETER 391.			Equation of equal Altitude.	Apparent Noon by Chronometer 391.	Equation of Time.	Mean Noon by Chronometer 391.	CHRONOMETER SLOW OR FAST FOR MEAN TIME.		RATE PER DAY.	
Month.	Forenoon.	Afternoon.	Mean.					391 Slow.	Earnshaw Slow.	391	Earnshaw.
	h. ′ ″	h. ′ ″	h ′ ″	″—	h. ′ ″	′ + ″	h. ′ ″	h. ′ ″	h. ′ ″	″	″
Dec. 24	7 36 28,1	11 58 19,6	9 47 23,8	0,2	9 47 23,6	0 21,2	9 47 44,8	2 12 15,2	0 36 26,2		
25	7 31 24,3	12 03 34,0	9 47 29,1	0,3	9 47 28,8	0 08,7	9 47 20,1	2 12 39,9	0 36 12,9	— 24,7	+ 13,3
		by Earnshaw			*Earnshaw*		*Earnshaw*			30,6	10,9
26	9 13 31,2	1 35 42,8	11 24 37	0,5	11 24 36,5	0 38,5	11 23 58	2 13 10,5	0 36 02,0	24,6	15,9
27	9 14 12,4	1 36 33	11 25 22,7	0,6	11 25 22,1	01 08,2	11 24 13,9	2 13 35,1	0 35 46	31,1	17,9
28	9 27 56,6	1 24 23,8	11 26 10,3	0,8	11 26 09,5	01 37,7	11 24 31,8	2 14 06,2	0 35 28,2	15,3	15,6
31	9 16 38,7	1 40 10,8	11 28 24,8	0,9	11 28 23,9	03 05,2	11 25 18,7	2 14 52,3	0 34 41,3	10,3	13,7
1823 Jan. 1	9 19 42,7	1 38 31,8	11 29 07,3	1,1	11 29 06,2	03 33,8	11 25 32,4	2 15 02,6	0 34 27,6	18	13,0
2	9 25 20,1	1 34 17,8	11 29 49	1,3	11 29 47,7	04 02,3	11 25 45,4	2 15 20,6	0 34 14,6	15,0	15,5
4	9 18 36,1	1 43 55,6	11 31 15,9	1,5	11 31 14,4	04 58	11 26 16,4	2 15 50,6	0 33 43,6	11	17
6	9 19 32	1 45 56,6	11 32 44,3	1,6	11 32 42,7	05 52,3	11 26 50,4	2 16 12,6	0 33 09,6	13,1	12,2
9	9 18 00,9	1 51 17,8	11 34 39,4	1,9	11 34 37,5	07 10,5	11 27 27,0	2 16 52	0 32 33	15,8	12,2
10	9 15 49,7	1 54 43,6	11 35 16,6	1,9	11 35 14,7	07 35,5	11 27 39,2	2 17 07,8	0 32 20,8	15,5	12,5
11	9 16 06,7	1 55 41,0	11 35 53,8	2,0	11 35 51,8	08 00,1	11 27 51,7	2 17 23,3	0 32 08,3	14,1	13,9
12	9 18 25,2	1 54 38,1	11 36 31,6	2,0	11 36 29,6	08 24	11 28 05,6	2 17 37,4	0 31 54,2	13,1	17,7
15	9 17 15,7	1 59 50,5	11 38 33,1	2,2	11 38 30,9	09 32,1	11 28 58,8	2 18 17,2	0 31 01,2		

1823	Times by Chronometer Earnshaw.							Equation of equal Altitude.	Apparent Noon by Chronometer Earnshaw.			Equation of Time.	Mean Noon by Chronometer Earnshaw.			Chronometer Slow or Fast for Mean Time.				Rate per Day.	
Month.	Forenoon.			Afternoon.			Mean.									391 Slow.			Earnshaw Slow.			391.	Earnshaw.
	h.	′	″	h.	′	″	h.	′	″	″	h.	′	″	′ + ″	h.	′	″	h.	′	″	h.	′	″	″	″
Jan. 16	9	15	00,6	2	03	10,8	11	39	05,7	2,4	11	39	03,3	09 53,4	11	39	10,9	2	18	28,6	0	30	50,1	— 11,4	+ 11,1
19	9	15	31,7	2	06	09,7	11	40	50,7	2,5	11	40	48,2	10 53,2	11	39	55,0	2	18	55,0	0	30	05,0	08,8	15
20	9	17	59,8	2	04	46,4	11	41	23,1	2,6	11	41	20,5	11 11,6	11	40	08,9	2	19	06,1	0	29	51,1	11,1	13,9
21	9	18	06	2	05	43,2	11	41	54,6	2,6	11	41	52	11 29,3	11	40	22,7	2	19	17,3	0	29	37,3	11,2	13,8
22	9	18	11,3	2	06	41,5	11	42	26,4	2,7	11	42	23,7	11 46,1	11	40	37,6	2	19	27,4	0	29	22,4	10,1	14,9
23	9	18	14,8	2	07	38,3	11	42	56,3	2,7	11	42	53,6	12 02,2	11	40	51,4	2	19	39,6	0	29	08,6	12,2	13,8
24	9	18	21,4	2	08	40	11	43	30,7	2,7	11	43	28	12 17,5	11	41	10,5	2	19	52,5	0	28	49,5	12,9	19,5
27	9	20	58,3	2	09	26,8	11	45	12,6	2,9	11	45	09,7	12 58,5	11	42	11,2	2	20	39,8	0	27	48,8	15,8	20,2
28	9	33	31,2	2	57	57,6	11	45	44,4	2,9	11	45	41,5	13 10,6	11	42	30,9	2	21	03,1	0	27	29,1	23,3	19,7
30	9	18	48,5	2	14	39	11	46	43,8	3,0	11	46	40,8	13 32,2	11	43	08,6	2	21	14,4	0	26	51,4	05,7	18,9
— 31	9	18	46,1	2	15	30,4	11	47	08,3	3,0	11	47	05,3	13 41,8	11	43	23,5	2	21	23,5	0	26	36,5	09,1	14,9
Feb. 2	9	23	14,2	2	12	50,0	11	48	02,1	2,9	11	47	59,2	13 58,7	11	44	01,5	2	21	40,5	0	25	59,5	08,5	18,5
3	9	25	23,7	2	11	29,2	11	48	26,5	2,9	11	48	23,6	14 05,9	11	44	17,7	2	21	52,3	0	25	42,3	11,8	17,2
5	9	18	35,6	2	19	56	11	49	15,8	2,8	11	49	13,0	14 17,9	11	44	55,1	2	22	11,9	0	25	04,9	09,8	18,7
7	9	34	07,2	2	06	08,1	11	50	07,6	2,8	11	50	04,8	14 26,8	11	45	38,0	2	22	33,9	0	24	21,9	11,0	21,5
8	9	16	20,4	2	25	41,6	11	50	31,0	2,8	11	50	28,2	14 30	11	45	58,2	2	22	40,8	0	24	01,8	06,9	20,1
9	9	16	11,6	2	25	26,5	11	50	49,0	2,8	11	50	46,2	14 32,4	11	46	13,8	2	22	51,2	0	23	46,2	10,4	15,6
10	9	18	16,3	2	24	00,7	11	51	08,5	2,7	11	51	05,8	14 34,1	11	46	31,7	2	23	02,3	0	23	28,3	11,1	18,0
11	9	18	04,6	2	24	39,9	11	51	22,3	2,7	11	51	19,6	14 34,9	11	46	44,7	2	23	17,3	0	23	14,3	15,1	14
12	9	17	54,1	2	25	20,8	11	51	37,4	2,7	11	51	34,7	14 35,0	11	46	59,7	2	23	29,3	0	23	00,3	12,0	14
13	9	17	41,8	2	25	57,2	11	51	49,5	2,7	11	51	46,8	14 35,4	11	47	11,4	2	23	39,1	0	22	47,6	09,8	12,7

1823	Times by the Clock.			Equation of equal Altitude	Apparent Noon by the Clock.	Equation of Time.	Mean Noon by the Clock.	Chronometers Slow or Fast for Mean Time.			Rate per Day.		
Month.	Forenoon.	Afternoon.	Mean.					Clock.	391 Slow.	Earnshaw Slow	Clock.	391.	Earnshaw.
	h. ′ ″	h. ′ ″	h. ′ ″	″	h. ′ ″	′ ″	h. ′ ″	h. ′ ″	h. ′ ″	h. ′ ″			″
Feb. 14	9 42 12	2 46 56,3	12 14 34,2	2,5	12 14 31,63	14 32,87	11 59 58,76	0 00 01,24	2 23 50,3	0 22 33,5			
15	9 52 27,8	2 36 35,8	12 14 31,8	2,6	12 14 29,15	14 30,66	11 59 58,49	0 00 01,51	,,	0 22 22,0	— 00,27	,,	+ 11,5
16	9 49 50,7	2 39 07,3	12 14 29	2,5	12 14 26,48	14 27,68	11 59 58,80	0 00 01,20	,,	,,	+ 00,31	,,	
18	9 36 11,4	2 52 28,7	12 14 20,1	2,3	12 14 17,77	14 19,49	11 59 58,28	0 00 01,72	2 24 45,7	0 21 32,7	— 00,26	,,	
19	9 40 39,1	2 47 49,7	12 14 14,4	2,4	12 14 12,00	14 14,36	11 59 57,64	0 00 02,36	2 24 57,4	0 21 18,4	00,64	— 12,7	14,3
20	9 35 16,9	2 52 58,7	12 14 07,8	2,3	12 14 05,51	14 08,43	11 59 57,08	0 00 02,92	2 25 06,9	0 21 01,9	00,56	09,5	16,5
21	9 39 09,7	2 47 00,3	12 13 05	2,2	12 13 02,83	14 01,87	11 59 00,96	0 00 59,04	,,	0 20 50			11,9
22	9 33 27,7	2 52 28,3	12 12 58	2,1	12 12 55,91	13 54,56	11 59 01,35	0 00 58,65	2 25 28,6	0 20 30,7	+ 00,39	10,8	19,3
23	9 33 00,3	2 52 38,3	12 12 49,3	2,1	12 12 47,16	13 46,70	11 59 00,46	0 00 59,54	2 25 38,5	0 20 14,3	— 00,89	09,9	16,4
24	9 32 31,2	2 52 47,3	12 12 39,3	2,1	12 12 37,24	13 38,12	11 58 59,12	0 01 00,88	2 25 48,9	0 19 57,8	01,34	10,4	16,5
25	10 37 13,3	1 47 45,3	12 12 29,3	1,9	12 12 27,35	13 28,96	11 58 58,39	0 01 01,61	2 26 00,6	0 19 36,6	00,73	11,7	21,2
26	9 33 39,3	2 50 58,1	12 12 18,7	1,8	12 12 16,86	13 19,22	11 58 57,64	0 01 02,36	2 26 12,4	0 19 17,4	00,75	11,8	19,2
27	9 32 33,6	2 50 25,2	12 11 29,4	1,8	12 11 27,58	13 08,89	11 58 18,69	0 01 41,31	2 26 24,3	0 19 01,3		11,9	16,1
March 1	9 33 41,9	2 48 31,6	12 11 06,8	1,7	12 11 05,05	12 46,59	11 58 18,46	0 01 41,54	2 26 48,5	0 18 24,3	00,12	12,1	18,5
3	9 28 44,5	2 52 42,1	12 10 43,3	1,5	12 10 41,83	12 22,27	11 58 19,56	0 01 40,44	2 27 10,4	0 17 41,4	+ 00,55	11,0	21,4
4	9 31 21,8	2 49 38,4	12 10 30,1	1,4	12 10 28,69	12 09,38	11 58 19,31	0 01 40,69	2 27 21,7	0 17 19,7	— 00,25	10,5	24,3
8	9 26 04,3	2 51 58	12 09 01,2	1,2	12 09 00,00	11 13,62	11 57 46,38	0 02 13,62	2 28 03,6	0 15 42,6			
9	9 25 40,7	2 51 52,4	12 08 46,6	1,0	12 08 45,6	10 58,63	11 57 46,95	0 02 13,05	4 11 46,5	0 00 03,1	+ 00,57		
10	9 35 53,6	2 41 09,7	12 08 31,7	1,0	12 08 30,72	10 43 41	11 57 46,31	0 02 13,69	4 12 05,5	0 00 13,3 *Fast.*	— 00,64	19	10,2

1823	Times by the Clock.								Equator of equal Alti-tudes.	Apparent Noon by the Clock.			Equation of Time.			Mean Noon by the Clock.			Chronometers Slow or Fast by Mean Time.							Rate per Day.		
Month.	Forenoon.			Afternoon.			Mean.												Clock.			391 Slow.			Earnshaw Slow.			Clock.	391	Earn-shaw.
	h.	′	″	h.	′	″	h.	′	″	″	h.	′	″	′	″	h.	′	″	h.	′	″	h.	′	″	h.	′	″			
																			Slow.											
Mar. 11	9	26	27,1	2	49	11,7	12	07	49,4	1,0	12	07	48,44	10	27,75	11	57	20,69	0	02	39,31	4	12	19,4	0	00	26,9			
12	9	28	04,9	2	47	02	12	07	33,5	0,8	12	07	32,69	10	11,80	11	57	20,89	0	02	39,11	4	12	28,1	0	00	42,2	+ 00,20	— 08,7	+ 15,3
13	9	23	40,5	2	50	53,9	12	07	17,2	0,7	12	07	16,55	09	55,51	11	57	21,04	0	02	38,96	4	12	43,9	0	01	00,1	00,15	15,8	17,9
14	9	23	18	2	50	43,9	12	07	00,9	0,6	12	07	00,35	09	38,97	11	57	21,38	0	02	38,62	4	12	55,6	0	01	17,4	00,34	11,7	17,3
16	9	51	07,8	2	21	44,7	12	06	26,2	0,4	12	06	25,8	09	05,02	11	57	19,78	0	02	39,22	4	13	18,2	0	02	01,3	— 00,30	11,3	22
17	9	23	51,2	2	47	42,3	12	05	46,8	0,4	12	05	46,35	08	47,69	11	56	58,66	0	03	01,34	4	13	28,6	0	02	25	,,	10,4	23,7
18	9	54	30	2	16	25,3	12	05	28,1	0,4	12	05	27,7	08	30,14	11	56	57,56	0	03	02,44	4	13	41,4	0	02	40,6	01,10	12,4	15,6
19	9	19	08,6	2	51	09,6	12	05	09,1	0,3	12	05	08,76	08	12,32	11	56	56,44	0	03	03,56	4	13	55,3	0	02	58,8	01,12	13,9	18,2
20	9	18	48,8	2	50	52,7	12	04	50,7	0,3	12	04	50,41	07	54,35	11	56	56,06	0	03	03,94	4	14	06,8	0	03	20,5	00,38	11,5	22,7
				Earnshaw.							*Earnshaw.*					*Earnshaw.*														
21	9	33	10,0	2	49	18,4	12	11	14,2	0,3	12	11	13,92	07	36,21	12	03	37,71				4	14	20,3	0	03	37,71		13,5	17,2
22	9	33	08,6	2	49	15	12	11	11,8	0,3	12	11	11,5	07	17,9	12	03	53,60				4	14	35,4	0	03	53,6		15,1	15,9

OBSERVATIONS

For the TIME, LONGITUDE, and RATES of CHRONOMETERS at PULO GAUNSAH LOUT in 1823. (R.)

Month.	Mean of Times per Chronometer by Earnshaw.			Altitudes Corrected for Error of the Sextant.			Refraction.	Parallax.	True Altitude of the Sun's Centre.			Sun's Declination.			Apparent Time.			Equation of Time.		Mean Time.			Chronometer Slow or Fast for Mean Time. Earnshaw Slow.			Rate per Day. Earnshaw	Rate per Day. No 397
1822	h.	'	"	°	'	"	'	"	°	'	"	°	'	"	h.	'	"		'	"	h.	'	"	h.	'	"	"	
Dec. 22	22	8	51,25	60	29	27,5	32,5	4 +	60	28	59	23	27	40,2 s.	22	46	17,9	—	0	52,8	22	45	25,1	0	36	33,85		
23	20	39	57,22	43	59	41,67	59	6,5	43	58	49,17	23	26	48,16	21	16	47,88		0	24,73	21	16	23,15	0	36	25,93	+ 8,45	
24	19	56	13,83	34	29	41,66	82,5	7,55	34	28	26,71	23	26	3,47	20	32	24,25	+	0	4,25	20	32	28,5	0	36	14,67	11,61	
25	20	34	7,83	42	29	37,5	62	6,75	42	28	42,25	23	24	29,5	21	9	34,23		0	34,87	21	10	9,1	0	36	1,2	13,05	
26	20	46	44	44	58	51,75	57	6,5	44	58	1,2	23	22	27,8	21	21	25,3		1	4,8	21	22	30,1	0	35	46,1	14,05	
28	1	50	7,2	47	59	37,5	65	6,9	47	58	52,7	23	19	25,8	2	23	56,8		1	40,5	2	25	37,3	0	35	30,05	13,25	
	20	29	48	40	59	37,5	65	6,9	40	58	39,4	23	13	39,7	21	2	9,5		2	32,55	21	4	42,05	0	34	54,05	20,25	
30	20	49	22,22	44	59	37,5	57	6,5	44	58	47	23	9	44,3	21	21	2,3		3	1,9	21	24	4,2	0	34	41,08	11,82	
31	20	38	1	42	29	37,5	62	6,75	42	28	42,25	23	5	25,5	21	8	42,25		3	30,4	21	12	29	0	34	28	14,09	
1823																											11,75	
Jan. 1	21	2	34,75	47	29	37,5	52	6,2	47	28	51,7	23	00	32,1	21	32	51,5		3	59,3	21	36	50,8	0	34	16,05	12,77	
2	20	55	45,75	45	59	37,5	55	6,4	45	58	48,9	22	55	17	21	25	21,7		4	27,4	21	29	49,1	0	34	3,35	16,15	
3	20	53	54,75	45	29	40	56	6,5	45	28	50,5	22	49	34	21	22	46,9		4	55,08	21	27	41,98	0	33	47,23	17,57	
4	20	36	22,67	41	57	30	63	6,8	41	40	16,1	22	43	28,1	21	4	30,4		5	22,1	21	9	52,5	0	33	29,83	13,53	
5	20	37	3,25	41	59	27,5	63	6,8	41	42	13,6	22	36	50,5	21	4	30,4		5	49,15	21	10	19,55	0	33	16,3	13,05	
8	20	36	6,5	41	30	13,15	64	6,89	41	12	59	22	14	18,6	21	1	36,2		7	7,47	21	8	43,67	0	32	37,17		
26	20	48	57	43	12	35	60,5	6,7	42	55	25,1	18	41	11,5	21	3	54,7		12	56,95	21	16	51,65	0	27	54,65	21,10	
27	21	9	6,6	47	40	25,8	52	6,3	47	23	24,2	18	25	35,5	21	23	30,6		13	9,27	21	36	39,87	0	27	33,27	22,12	
28	22	14	30,6	61	20	2,5	32,4	4	61	3	18,3	18	9	11	23	28	19 8		13	21	22	41	40,8	0	27	10,14		

By Equal Altitudes

1823	Times by Earnshaw.			Equation of equal Altitudes.	Noon by Chronometer.	Equation of Time.	Apparent Noon	Chronometers Slow or Fast for Mean Noon.			Rate per Day.		
Month.	Forenoon.	Afternoon.	Noon Nearly.					Haswall Slow.	Earnshaw Slow.	No. 391 Slow.	Haswall	Earnshaw.	No 391.
	h. ′ ″	h. ′ ″	h. ′ ″	″	h. ′ ″	′ ″	h. ′ ″	h. ′ ″	h. ′ ″	h. ′ ″	″	″	″
Feb. 19	10 20 36	14 7 53,87	12 14 14,93	—2,53	12 14 12,4	—14 14,35	11 59 58,05	0 0 1,95	0 21 17,95	2 24 56,95			
20	10 17 46,5	14 10 29,5	12 14 8	2,46	12 14 5,54	14 8,47	11 59 57,07	0 0 2,93	0 21 1,98	2 25 7,48	— 0,98	+ 15,97	— 10,53
March 1	10 19 9,37	14 3 7,16	12 11 8,26	1,83	12 11 6,43	12 46,59	11 58 19,84	0 1 40,16	0 18 22,91	2 26 47,16			
3	10 18 1,21	14 3 25,4	12 10 44,3	1,65	12 10 42,65	12 22,65	11 58 20,39	0 1 39,61	0 17 40,61	2 27 9,61	0,27	21,15	11,22

1823	Mean of Times by Haswall's Clock.	Altitudes Corrected for Error of Sextant.	Refraction	Parallax.	True Altitude of the Sun's Centre.	Declination.	Apparent Time.	Equation of Time.	Mean Time.	Chronometer Slow or Fast for Mean Time.			Rate per Day.		
Month.										Haswall Slow.	Earnshaw Fast.	No. 391 Slow.	Haswall	Earnshaw.	No. 391
	h. ′ ″	° ′ ″	″	″	° ′ ″	° ′ ″	° ′ ″	′ ″	h. ′ ″	h. ′ ″	h. ′ ″	h. ′ ″		″	″
March 8	22 26 28,5	64 0 12,8	28	+ 4	63 59 48,8	4 49 30,6 S.	22 17 41,4	+ 10 59,72	22 28 41,12	0 2 12,62	0 0 2,87	4 11 46,12			
9	22 19 51	62 30 12,8	29,5	4	62 29 47,2	4 26 10,5	22 11 20,06	10 44,56	22 22 4,62	0 2 13,62	0 0 12,38	4 12 5,87		+ 9,32	— 18,75
10	22 20 57,5	63 0 12,8	29	4	62 59 47,8	4 2 40,9	22 13 7,93	10 28,83	22 23 36,76	0 2 39,26	0 0 26,99	4 12 19,26		14,68	13,25
11	22 18 27,37	62 30 1,25	29,5	4	62 29 35,75	3 39 11,5	22 10 53,4	10 13,03	22 21 6,43	0 2 39,06	0 0 42,19	4 12 28,06		15,22	8,78
12	22 17 59,79	62 30 1,25	29,5	4	62 29 35,75	3 15 37,8	22 10 42,03	9 56,79	22 20 38,82	0 2 39,03	0 0 59,97	4 12 44,03		17,72	16,03
13	22 17 33,12	62 30 1,25	29,5	4	62 29 35,75	2 51 58,7	22 10 32,35	9 40,24	22 20 12,59	0 2 39,47	0 1 16,28	4 12 56,47		16,24	12,51
15	2 32 27,29	53 30 1,25	42	5,3	53 29 24,55	2 24 12,3	2 25 48,06	9 20,5	2 35 8,56	0 2 41,27	0 1 37,73	4 13 9,77		21,71	13,04
	22 18 43,08	63 0 1,25	29	4	62 59 36,25	2 4 37,4	22 12 16,71	9 6,32	22 21 23,03	0 2 39,95	0 2 00,55	4 13 18,95		22,77	9,23
16	22 21 58,25	64 0 1,25	28	4	63 59 37,25	1 40 52,8	22 16 11,03	8 48,95	22 24 59,98	0 3 1,73	0 2 24,52	4 13 28,98		23,79	10,21
18	2 53 24,58	47 59 58,75	51	6,2	47 59 13,95	1 12 41,2	2 47 59,59	8 28,09	2 56 27,68	0 3 3,10	0 2 39,9	4 13 42,1		15,59	12,91
	22 17 11,62	63 0 1,25	29	4	62 59 36,25	0 53 31,7	22 12 1,96	8 13,67	22 20 15,63	0 3 4,01	0 2 58,24	4 13 55,76		18,18	13,88
20	2 20 49,91 *Earnshaw.*	56 0 1,25	38	4,8	55 59 28,05	0 25 49,8	2 16 1,57	7 52,66	2 23 54,23	0 3 4,32	0 3 20,18	4 14 7,07		21,59	11,26
21	3 11 18,5	45 0 1,25	57	6,5	44 59 10,75	0 1 23,3	3 00 3,33	7 33,93	3 7 37,26		0 3 41,24	4 14 16,76		18,61	11,87
22	3 14 10,33	44 0 1,25	59	6,5	44 15 12,8	0 22 19,9 N.	3 2 58,84	7 15,01	3 10 14,45		0 3 55,88	4 14 33,12		14,64	16,13

At PULO GAUNSAH LOUT.

Results of the Observations

For the True Bearing of Mount Ophir and the Variation of the Compass. (L.)

Month.	Apparent Time.	Horary Angle.	Distance Sun's N. Limb and Mount Ophir corrected for error and Semi-Diameter.	Azimuth.	Horizontal Arc.	True Bearing.	Magnetic Bearing.	Variation of the Compass
	h. ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
Dec. 24	6 05 02	88 44 30	26 01 13	66 33 44	25 58 41	87 27 35	86 15 00	1 12 35 E.
Jan. 10	6 18 07	85 28 15	24 58 56	67 52 17	24 37 14	87 30 29	86 15 00	1 15 29
30	6 01 13	89 41 45	20 29 15	72 04 45	20 28 15	87 26 17	86 15 00	1 11 17
					Mean..	87 28 07 N. E.		1 13 07 E

For the Variation of the Compass,

By the Sun's Amplitude. (R.)

1822 Month.	Time.	Sun's Declination.	True Amplitude.	Magnetic Bearing.	Variation.
	h. ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
December 25	6 2	23 25 43,6 S.	E. 66 33 16 W.	S. 64 31 17,7 W.	2 1 53,3 E.
26	6 4	23 23 51,4	66 35 26,2	65 1 17,7	1 34 18,5
27	6 1 45	23 21 40,2	66 37 47,4	66 37 47,4	1 37 47,4
29	6 5	23 12 18,5	66 47 9,3	65 5	1 42 9,3
31	6 5 15	23 8 16,1	66 51 11,9	64 45	2 6 11,9
1823 January 1	6 5	23 3 44,7	66 55 43,4	65 25	1 30 43,4
2	6 5	22 58 46,3	67 0 42,08	64 55	2 5 42,08
3	6 7	22 53 19,8	67 6 8,6	65 15	1 51 00
				Mean..	1 48 43,12

By the Sun's Azimuth.

1823 Month.	Time.	Sun's Altitude corrected for error of Sextant.	Refraction.	Parallax.	True Altitude of the Sun's Centre.	Sun's Declination.	True Azimuth.	Magnetic Bearing.	Variation.
	h. ′	° ′ ″	′ ″	″	° ′ ″	° ′ ″	° ′ ″	° ′	° ′ ″
			−	+					
Jan. 3	5 59	1 16 50	22 34,2	9	1 8 34,5	22 53 21,2 S.	S. 67 6 14,4 W.	S. 65 15 W.	1 51 14,4 E.
4	5 19	10 12 50	5 8	9	10 22 10,7	22 47 38,2	66 47 52,2	65 15	1 32 52,2
5	5 40	5 44 56,9	8 34,1	9	5 44 56,9	22 41 13	67 10 12	65 15	1 55 12
								Mean..	1 46 26,2 E.

By the True Bearing of the Sun. (R.)

Month.	Time.	Sun's True Distance.	Sun's Declination.	True Altitude of the Sun.	Horizontal Arc.	True Azimuth.	True Bearing.	Magnetic Bearing.	Variation.
	h. ' "	° ' "	° ' "	' "	° ' "	° ' "	° ' "	° '	°° ' ."
Jan. 9	18 7 43,5	54 36 54,1	22 6 56,5 S.	1 46 45,7	54 34 41,4	67 52 30 E.	N 57 32 48,5 E.	N. 55 45 E.	1 47 48,5 E.
20	18 3 35,4	52 32 46,7	20 7 45	00 50 27,7	52 32 47	69 52 18,2	57 35 37	55 45	1 50 37
								Mean....	1 49 12,75

VARIATION OF THE COMPASS.

	° ' "
By the Sun's Amplitude.....	1 48 43,12 E.
Azimuth.....	1 46 26,2
True Bearing.....	1 49 12,75
Medium....	1 48 E. (R.)

PLACES on the WEST COAST of SUMATRA and the ISLANDS in the vicinity of NATTAL.

PULO PANJONG from PULO GAUNSAH LOUT, 179619 feet. (L)*

Triangles.	Angles.	Distances from the intersected objects in	Feet.	Miles.
	° ' "			
Pulo Panjong.....	152 52 57	Mount Ophir.....	264974	50,184
Pulo Gaunsah Lout.....	16 12 35		432663	81,944
Mount Ophir.....	10 54 28			

PULO GAUNSAH LOUT from MOUNT OPHIR 432663.

Pulo Gaunsah Lout.....	145 07 31	Pulo Pinnee.....	32163	6,091
Mount Ophir.....	2 17 39		459429	87,013
Pulo Pinnee.....	32 34 50			

PULO PINNEE from PULO GAUNSAH LOUT, 32163 feet.

Pulo Pinnee.....	43 52 30	Pulo Oolur.....	15473	2,93
Pulo Gaunsah Lout.....	27 02 31		23588	4,467
Pulo Oolur.....	109 04 59			
Pulo Pinnee.....	11 08 42	Pulo Gaunsah.....	29316	5,552
Pulo Gaunsah Lout.....	59 02 0		6609	1,252
Pulo Gaunsah.....	109 49 18			
Pulo Pinnee.....	76 06 40	Nellang Hill.....	138052	26,146
Pulo Gaunsah Lout.....	90 25 0		134020	25,383
Nellang Hill.....	13 28 20			

* This Base, from Pulo Panjong to Pulo Gaunsah Lout, is obtained by the difference of Latitude and difference of Longitude, and reduced into feet, by using the degree on the Meridian (Fathoms 60459) and the degree on the Perpendicular (Fathoms 60857) at the Equator, with the Bearing of Pulo Panjong from Pulo Gaunsah Lout.

Pulo Pinnee from Pulo Gaunsah Lout, 32163 feet.

Triangles.	Angles. ° ' "	Distances from the intersected objects in	Feet.	Miles.
Pulo Pinnee	63 13 18	Oojong Twan Hill	121691	23,048
Pulo Gaunsah Lout	101 47 0		110979	21,019
Oojong Twan Hill	14 59 42			
Pulo Pinnee	58 52 0	Lubwaun Looloo Hill	127600	24,167
Pulo Gaunsah Lout	107 12 0		114334	21,654
Lubwaun Looloo Hill	13 56 0			
Pulo Pinnee	53 03 28	Toolechemanah Hill	144834	27,430
Pulo Gaunsah Lout	115 22 0		128109	24,263
Toolechemanah Hill	11 34 32			
Pulo Pinnee	49 29 50	Pungalauren Hill	166861	31,602
Pulo Gaunsah Lout	120 59 30		148005	28,031
Pungalauren Hill	9 30 40			
Pulo Pinnee	41 22 40	Kurboyee Hill	212278	40,204
Pulo Gaunsah Lout	132 10 30		189341	35,860
Kurboyee Hill	6 26 50			
Pulo Pinnee	58 52 35	Peak N. E. of Ayer Bonghy	334083	63,273
Pulo Gaunsah Lout	116 10 0		318650	60,350
Peak N. E. of Ayer Bonghy	4 57 25			

The Latitude and Longitude of some of the Places on the West Coast of Sumatra, and the Islands in the vicinity of Nattal, deduced from the Station of Pulo Gaunsah Lout in Latitude 0° 01' 49" N. and Longitude 98° 50' 06" E.*

Station at	Names of Places.	Bearings referred to the Meridian. ° ' "	Distances direct.	Distances on the Meridian	Distances on the Perpendicular	Latitude.	Longitude from Pulo Gaunsah Lout.	Longitude from Greenwich.
			feet.	*feet.*	*feet.*	° ' "	° ' "	° ' "
Pulo Gaunsah Lout.	Pulo Pinnee	57 37 02 N. W.	32163	17226 N.	27162 W	0 04 49 N.	0 04 28 W	98 47 17 E.
	Pulo Oelur	30 34 03	23588	20310	11996	0 05 11	0 01 58	98 48 09
	Pulo Gaunsah	1 24 58 N. E.	6609	6607	163 E.	0 02 55	0 0 02 E.	98 50 09
	Nellang Hill	32 47 58	134020	112653	72599	0 20 27	0 11 56	99 02 03
	Oojong Twan	44 09 58	110979	79608	77324	0 14 59	0 12 42	99 02 49
	Lubwaun Looloo	49 34 58	114334	74128	87048	0 14 05	0 14 18	99 04 25
	Toolechemanah	57 44 58	128109	68362	108345	0 13 07	0 17 48	99 07 55
	Pungalauren	63 22 28	148005	66330	132310	0 12 47	0 21 44	99 11 51
	Kurboyee Hill	74 33 28	189341	50415	182506	0 10 0	0 29 59	99 20 06
	Mount Ophir	87 28 07	432663	19109	432241	0 04 59	1 10 52	100 00 59
	Pk. N. E. of Ar. Bonghy	58 32 58	318650	166260	271838	0 29 17	0 44 40	99 34 47

* For the Deduction of the Longitude of Pulo Gaunsah Lout—Vide Page

Latitude of Bencoolen.

By the Stars. (L.)

1822 Month.	Stars Observed.	Meridian Altitude.	Corrected Refraction.	Mean Declination.	Nutation.	Aberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude South.
		° ′ ″	′ ″	° ′ ″	+ ″	+ ″	° ′ ″		° ′ ″	° ′ ″
Apr. 25	α Crucis.....	31 42 0 s.	1 27,1	62 06 55,3 s.	4,46	13,13	31 40 32,9 s.	58 19 27,1 N.	62 07 12,9 s.	3 47 45,8
26	α Crucis.....	31 42 15	1 27,1	62 06 55,4	4,5	13,3	31 40 47,9	58 19 12,1	62 07 13,2	3 48 01,1
27	α Crucis.....	31 42 22,5	1 27,1	62 06 55,4	4,5	13,5	31 40 55,4	58 19 04,6	62 07 13,4	3 48 08,8
29	β Ursæ Maj...	28 53 25 N.	1 36,9	57 19 56,8 N.	− 0,3	+ 11,3	28 51 48,1 N.	61 08 11,9 s.	57 20 07,8 N.	3 48 04,1
	γ Ursæ Maj....	31 33 05	1 27,7	54 40 58,2	2,5	9,2	31 31 37,3	58 28 22,7	54 41 04,9	3 47 17,8
	α Crucis.....	31 42 02,5 s.	1 27,1	62 06 55,5 s.	+ 4,5	+ 13,9	31 40 35,4 s.	58 19 24,6 N	62 07 13,9 s.	3 47 49,3
	β Crucis.....	35 05 45	1 16,3	58 42 59,2	4,5	13,8	35 04 28,7	54 55 31,3	58 43 17,5	3 47 46,2
	β Centauri.....	34 18 22,5	1 18,5	59 30 31,9	6,3	10,2	34 17 04,0	55 42 06	59 30 48,4	3 47 52,4
	Arcturus.....	66 06 40 N	0 23,6	* N			66 06 16,4 N	23 53 43,6 s.	20 06 31,6 N	3 47 12
	α Coronæ.....	58 52 47,5	0 32,2	27 19 08,1	− 8,4	− 6,2	58 52 15,3	31 07 44,7	27 18 53,5	3 48 51,2
May 3	β Ursæ Maj....	28 53 45	1 36,9	57 19 57	− 0,3	+ 12,2	28 52 08,1	61 07 51,9	57 20 08,9	3 47 43
	γ Ursæ Maj....	31 32 47,5	1 27,7	54 40 53,1	2,5	11	31 31 19,8	58 28 40,2	54 41 06,6	3 47 33,6
	α Crucis.....	31 42 02,5 s.	1 27,1	62 06 55,8 s.	+ 4,5	+ 14,6	31 40 35,4 s	58 19 24,6 N.	62 07 14,9 s.	3 47 50,3
	β Crucis.....	35 05 20	1 16,3	58 42 59,5	4,5	14,4	35 04 03,7	54 55 56,3	58 43 18,4	3 47 22,1
	β Centauri.....	34 17 50	1 18,5	59 30 33,6	6,3	11,0	34 16 31,5	55 43 28,5	59 30 50,9	3 47 22,4
	α Centauri.....	33 42 45	1 20,4	60 06 38,2	7,6	7,1	33 41 24,6	56 18 35,4	60 06 52,9	3 48 17,5
7	α Crucis.....	31 41 56,5	1 27,1	62 06 55,1	4,6	15,2	31 40 29,4	58 19 30,6	62 07 14,9	3 47 44,3
	β Crucis.....	35 05 26,5	1 16,3	58 42 59,7	4,6	14,9	35 04 10,2	54 55 49,8	58 43 19,2	3 47 29,4
19	α Crucis.....	31 41 56,5	1 27,1	62 06 56,6	4,6	16,9	31 40 29,4	58 19 30,6	62 07 18,1	3 47 47,5
22	α Crucis.....	31 41 44 s.	1 27,1	62 06 56,8	4,6	17,2	31 40 16,9	58 19 43,1	62 07 18,6 s	3 47 35,5
	β Crucis.....	35 05 31,5	1 16,3	58 43 00,4	4,7	16,9	35 04 15,2	54 55 44,8	58 43 22	3 47 37,2
	β Centauri.....	34 18 11,5	1 18,5	59 30 32,7	6,4	14,4	34 16 53	55 43 07	59 30 53,5	3 47 46,5
	Arcturus.....	66 06 34 N	0 23,6	*			66 06 10,4 N	23 53 49,6 s	20 06 35,3 N	3 47 14,3
	α Coronæ.....	58 52 54	0 32,2	27 19 11,9 N.	− 8,4	− 1,5	58 52 21,8	31 07 38,2	27 19 02	3 48 36,2
	Antares.....	67 46 26,5 s.	0 21,7	*			67 46 04,8 s.	22 13 55,2 N	26 01 48,2	3 47 53
27	α Crucis.....	31 41 56,5	1 27,1	62 06 56,9 s.	+ 4,6	+ 17,6	31 40 29,4	58 19 30,6	62 07 19,1	3 47 48,5
28	α Crucis.....	31 41 56,5	1 27,1	62 06 57,1	4,6	17,7	31 40 29,4	58 19 30,6	62 07 19,4	3 47 48,8
29	α Crucis.....	31 41 54	1 27,1	62 06 57,2	4,6	17,8	31 40 26,9	58 19 33,1	62 07 19,6	3 47 45,5
	γ Crucis.....	37 41 21,5	1 09,9	56 06 49,3	4,6	17	37 40 11,6	52 19 48,4	56 07 19,9	3 47 22,5
	β Crucis.....	35 04 24	1 16,3	58 43 00,8	4,7	16,5	35 04 07,7	54 55 52,3	58 43 22	3 47 29,7
	η Ursæ Maj ..	36 01 09 N	1 13,6	50 12 11 N.	− 6,4	10,3	35 59 55,4 N	54 00 04,6 s.	50 12 14,9	3 47 49,7
	β Centauri.....	34 18 11,5 s	1 18,5	59 30 33 s.	+ 6,4	15,2	34 16 53 s	55 43 07 N.	59 30 54,6 s	3 47 47,6
	Arcturus.....	66 06 26,5 N	0 23,6	*			66 06 02,9 N	23 53 57,1 s	20 06 36,4 N	3 47 20,7
July 6	η Ursæ Maj ..	36 01 18	1 13,6	50 12 41,1 N.	− 6,5	− 15,8	36 00 04,4	53 59 55,6	50 12 18,8	3 47 36,8
	β Centauri.....	34 18 25,5 s	1 18,5	59 30 34,3 s.	+ 6,5	+ 16,2	34 17 07 s	55 42 53 N	59 30 57 s	3 48 04
	Arcturus.....	66 06 28 N.	0 23,6	*			66 06 04,4 N	23 53 55,6 s	20 06 40,9 N	3 47 14,4
	α Coronæ.....	58 53 20,5	0 32,2	27 19 05,7 N	− 8,4	9,4	58 52 48,3	31 07 11,7	27 19 06,7	3 48 05
	Antares.....	67 46 18 s	0 21,7	*			67 45 56,3 s	22 14 03,7 N	26 01 49,7 s	3 47 46
7	η Ursæ Maj ..	36 01 25,5 N.	1 13,6	50 12 09	− 6,5	16,6	36 00 11,9 N	53 49 48,1 s	50 12 19,1 N	3 47 29
	β Centauri.....	34 18 15,5 s.	1 18,5	59 30 34,5 s.	+ 6,5	16,1	34 16 57 s	55 43 03 N	59 30 57,1 s	3 47 44,1
	Arcturus.....	66 06 30,5 N.	0 23,6	*			66 06 06,9 N	23 53 53,1 s	20 06 41 N	3 47 12,1

1822 Month.	Stars Observed.	Meridian Altitude.	Corrected Refraction.	Mean Declination.	Nutation.	Aberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude South.
		° ′ ″	− ″	° ′ ″	− ″	+ ″	° ′ ″	° ′ ″	° ′ ″	
July 7	α Coronæ	58 53 03 N.	0 32,2	27 19 05,7 N.	8,4	9,5	58 52 30,6 N	31 07 29,2 S	27 19 06,8	3 48 22,4
	Antares	67 46 13 S.	0 21,7	*			67 45 51,3 S	22 14 08,7 N	26 01 49,7 S	3 47 41
10	β Centauri	34 18 23	1 18,5	59 30 35,2 S.	+ 6,5	15,9	34 17 04,5	55 42 55,5	59 30 57,6	3 48 02,1
	Arcturus	66 06 25,5 N.	0 23,6	*			66 06 01,9 N	23 53 58,1 S	20 06 41,2	3 47 16,9
	α Coronæ	58 53 13	0 32,2	27 19 05,5 N.	− 8,4	9,8	58 52 40,8	31 07 19,2	27 19 06,9	3 48 12,3
	Antares	67 46 05,5 S	0 21,7	*			67 45 43,6 S	22 14 16,2 N	26 01 49,8	3 47 33,6
11	β Centauri	34 18 15,5	1 18,5	59 30 35,5 S.	+ 6,5	15,8	34 16 57	55 43 03	59 30 57,8	3 47 54 8
	Arcturus	66 06 28 N.	0 23,6	*			66 06 04,4 N	23 53 55,6 S	20 06 41,3 N	3 47 14,3
	α Coronæ	58 53 23	0 32,2	27 19 05,4 N.	− 8,4	10,0	58 52 50,8	31 07 09,2	27 19 07	3 48 02,2
	Antares	67 46 13 S.	0 21,7	*			67 45 51,8 S	22 14 08,7 N	26 01 49,9 S	3 47 41,2
	γ Draconis	34 42 33 N.	1 15,3	*			34 41 17,7 N	55 18 42,3 S	51 30 50,1 N	3 47 52,2
13	Arcturus	66 06 23	0 23,6	*			66 05 59,4	23 54 00,6	20 06 41,5	3 47 19,1
	α Coronæ	58 53 18	0 32,2	27 19 05,5	8,4	10,0	58 52 45,8	31 07 14,2	27 19 07,1	3 48 07,1
	Antares	67 46 23 S.	0 21,7	*			67 46 01,3 S	22 13 58,7 N	26 01 49,9 S	3 47 51,5
15	α Coronæ	58 53 33,5 N.	0 32,2	27 19 05,6	8,4	10,1	58 53 01,3 N	31 06 58,7 S	27 19 07,3 N	3 47 51,4
16	α Coronæ	58 53 28	0 32,2	27 19 05,6	8,4	10,2	58 52 55,8	31 07 04,2	27 19 07,3	3 47 56 9
	Antares	67 46 10,5 S	0 21,7	*			67 45 48,8 S	22 14 11,2 N	26 01 50 S	3 47 38,8
17	α Coronæ	58 53 35,5 N.	0 32,2	27 19 05,4	8,4	10,3	58 53 03,3 N	31 06 56,7 S	27 19 07,3 N	3 47 49 4
	Antares.....	67 46 18 S.	0 21,7	*			67 45 56,3 S	22 14 03,7 N	26 01 50 S	3 47 46 3
	γ Draconis.....	34 42 45,5 N.	1 15,3	*			34 41 30,2 N	55 18 29,8 S	51 30 51,2 N	3 47 38,6

Note.—The Asterisks in the Column of "Mean Declination" are placed to shew, that the Declinations of the Stars, were taken from the Nautical Almanac; being there corrected for Nutation and Aberration.

Latitude. By the Sun—North of the Zenith. (L.)

1822 Month.	Limb.	Meridian Altitude.	Corrected Refraction.	Parallax.	Sun's Semi Diameter.	True Meridian Altitude of Sun's Centre.	Zenith Distance.	Declination.	Latitude South.
		° ′ ″	− ″	+ ″	′ + ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
May 14	L. L....	67 27 40 N.	21,7	3.5	15 50,6	67 43 11,4 N.	22 16 48,6 S.	18 29 23,5 N.	3 47 25,1
15	L. L....	67 13 14	21,6	3,5	15 50,4	67 28 46,3	22 31 13,7	18 43 56,2	3 47 17,5
19	L. L....	66 18 24	22,3	3,7	15 49,6	66 33 55	23 26 05	19 38 50,8	3 47 14,2
20	L. L....	66 05 19	21,9	3,8	15 49,4	66 20 50,3	23 39 09,7	19 51 44,8	3 47 24 9
21	L. L....	65 52 51,5	22,6	3,8	15 49,3	66 08 22	23 51 38	20 04 19,5	3 47 18,5
22	L. L....	65 40 21	23,3	3,9	15 49,1	65 55 50,7	24 04 09,3	20 16 30,3	3 47 39
27	L. L....	64 44 34	23,9	4,0	15 48,3	65 0 02,4	24 59 57,6	21 12 25,5	3 47 32,1
28	L. L....	64 34 41,5	24,2	4,0	15 48,3	64 50 09,6	25 09 50,4	21 22 31	3 47 19,4
July 6	L. L....	63 10 30,5	26,4	4,0	15 45,6	63 25 53,7	26 34 06,3	22 46 43,9	3 47 22,4
7	L. L....	63 16 23	26,2	4,0	15 45,6	63 31 46,4	26 28 13,6	22 40 47,5	3 47 26,1
8	L. L....	63 22 43	26,5	4,0	15 45,6	63 38 06,1	26 21 53,9	22 34 25,5	3 47 28.1

1822 Month.	Limb.	Meridian Altitude.	Corrected Refraction.	Parallax.	Sun's Semi Diameter.	True Meridian Altitude of Sun's Centre.	Zenith Distance.	Declination.	Latitude South.
		° ′ ″	−	+	′ + ″	° ′ ″	° ′ ″	° ′ ″ °	° ′ ″
July 9	L. L....	63 29 38 N	26,3	4,0	15 45,7	63 45 01,4 N	26 14 58,6 S	22 27 40,1 N	3 47 18,5
10	L. L....	63 36 50,5	26,1	4,0	15 45,7	63 52 14,1	26 07 45,9	22 20 31,6	3 47 14,3
11	L. L....	63 44 15,5	25,9	4,0	15 45,7	63 59 39,3	26 0 20,7	22 12 59,2	3 47 21,5
12	L. L....	63 51 55,5	25,8	4,0	15 45,8	64 07 19,5	25 52 40,5	22 05 05	3 47 35,5
13	L. L....	64 0 28	25,6	4,0	15 45,8	64 15 52,2	25 44 07,8	21 56 48,3	3 47 19
14	L. L....	64 09 05,5	25,3	4,0	15 45,8	64 24 30	25 35 30	21 48 09,6	3 47 20,4
15	L. L....	64 18 13	25,1	4,0	15 45,9	64 33 37,8	25 26 22,2	21 39 07	3 47 15,2
17	L. L....	64 37 23	25,0	4,0	15 46	64 52 48	25 07 12	21 19 55,5	3 47 16,5

Latitude of Bencoolen.

By the Stars. (R.)

1822 Month.	Stars Observed.	Meridian Altitude.	Corrected Refraction.	Mean Declination.	Nutation.	Aberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude South.
		° ′ ″	′ ″	° ′ ″	″	″	° ′ ″	° ′ ″	° ′ ″	
May 3	β Ursæ Maj.	28 54 9,4	94,79	57 19 57 N.	−2,02	+10,91	28 52 35,4	61 7 24,6 S.	57 20 5,9 N	3 47 18,7
	α Crucis	31 41 54,4	85	62 6 55,7 S.	+4,98	13,77	31 40 29,4	58 19 30,6 N.	62 7 14,47 S	3 47 43,8
	β Crucis	35 5 54,4	80,6	58 42 59,5	5,52	12,90	35 4 33,8	54 55 26,2	58 43 7,9	3 47 41,7
	β Centauri	34 18 6,9	64	59 30 31,8	7,31	8,51	34 17 2,9	55 42 57,1	59 30 47,6	3 47 50,5
8	α Centauri	33 42 6,8	78	60 6 38,4	8	7,03	33 40 48,8	56 19 11,2	60 6 53,4	3 47 42,2
27	γ Crucis	37 41 50	68,3	56 6 57,26	5,2	17,55	37 40 41,7	52 19 18,3	56 7 20	3 48 1,7
30	γ Ursæ Maj.	31 32 57,5	86	54 40 54 N.	−3,9	12,0	31 31 31,5	58 28 28,5 S.	54 41 2,1 N.	3 47 26,4
	β Crucis	35 5 12,5	75	58 43 00,9 S.	+5,68	15,91	35 3 57,5	54 56 2,5 N.	58 43 22,5 S.	3 47 20

Latitude. By the Sun—North of the Zenith. (R.)

1822 Month.	Limb.	Meridian Altitude.	Corrected Refraction.	Parallax.	Sun's Semi Diameter.	True Meridian Altitude.	Zenith Distance.	Corrected Declination.	Latitude South.
		° ′ ″	′	+ ″	′ + ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
May 24	L. L.	65 16 59,3	24	4	15 48,9	65 32 28,2	24 27 31,8 S.	20 39 58,7 N.	3 47 33,1
26	L. L.	64 55 6,8	23,6	4	15 48,4	65 10 35,6	24 49 24,4	21 1 58,9	3 47 25,5
28	L. L.	64 34 27,5	24,4	4	15 48,1	64 49 51,2	25 10 8,8	21 22 31,3	3 47 37,5
June 4	L. L.	63 43 7,5	25,9	4	15 47,2	63 49 55,3	26 10 4,7	22 22 36,6	3 47 28,1
5	L. L.	63 44 30	25,9	4	15 47,2	63 43 00,3	26 16 59,7	22 29 39,2	3 47 20,5

Results of the Observations for the Latitude of Bencoolen (L.)

By the Northern Stars, and Sun North of the Zenith.	°	'	"	*By the Southern Stars.*	°	'	"
β Ursæ Maj.	3	48	04,1 s.	α Crucis	3	47	45,8 s.
	3	47	43		3	48	01,1
γ Ursæ Maj.	3	47	17,8		3	48	08,8
	3	47	33,6		3	47	49,3
	3	47	26,3		3	47	50,3
η Ursæ Maj.	3	47	49,7		3	47	44,3
	3	47	36,8		3	47	47,5
	3	47	29		3	47	35,5
Arcturus.	3	47	12		3	47	48,8
	3	47	14,3		3	47	48,8
	3	47	20,7		3	47	45,5
	3	47	14,7	γ Crucis	3	47	22,5
	3	47	12,1	β Crucis	3	47	46,2
	3	47	16,9		3	47	22,1
	3	47	14,3		3	47	29,4
	3	47	19,1		3	47	37,2
α Coronæ.	3	48	05		3	47	29,7
	3	48	02,2	β Centauri	3	47	52,4
	3	48	07,1		3	47	22,4
	3	47	51,4		3	47	46,5
	3	47	56,9		3	47	47,6
	3	47	49,4		3	48	04
γ Draconis.	3	47	52,2		3	47	44,1
	3	47	38,6		3	48	02,1
Sun.	3	47	25,1		3	47	54,8
	3	47	17,5	α Centauri	3	48	17,5
	3	47	14,2	Antares	3	47	53
	3	47	24,9		3	47	46
	3	47	18,5		3	47	41
	3	47	39		3	47	33,6
	3	47	32,1		3	47	41,2
	3	47	19,4		3	47	46,3
	3	47	22,4		3	47	52,3
	3	47	26,1		3	47	38,6
	3	47	28,4				
	3	47	18,5				
	3	47	14,3				
	3	47	21,5				
	3	47	35,5				
	3	47	19				

By the Northern Stars, and Sun North of the Zenith.		*By the Southern Stars.*	
	° ′ ″		
Sun.....	3 47 20,4 s.		
	3 47 15,2		
	3 47 16,5		
Mean	3 47 30,13	Mean	3 47 45,86 s.

	° ′ ″	
Latitude of Bencoolen by the Northern Stars....	3 47 30,13	s.
do de Southern Stars....	3 47 45,86	
Mean....	3 47 38	s.

Results. (R.)

By the Northern Stars, and Sun North of the Zenith.		*By the Southern Stars.*	
	° ′ ″		° ′ ″
β Ursæ Maj.....	3 47 18,7 s.	α Crucis.....	3 47 43,8 s.
γ Ursæ Maj.....	3 47 26,4	β Crucis.....	3 47 41,7
Sun.....	3 47 33,1	β Centauri.....	3 47 50,5
,,	3 47 25,5	α Centauri.....	3 47 42,2
,,	3 47 37,5	γ Crucis.....	3 48 1,7
,,	3 47 28,1	β Crucis.....	3 47 20
,,	3 47 20,5		
Mean..	3 47 27,1 s.	Mean..	3 47 43,32 s.

By combining these Observations (*R.*) with the former (*L.*) we have for the Latitude of Bencoolen 3° 47′ 37″,5 or only half a Second different from the mean of the latter, which it will be seen is 3° 47′ 38″ S. and this I consider *the Latitude of Bencoolen.*

RESULTS OF THE OBSERVATIONS.

At BENCOOLEN.

For the TIME, LONGITUDE, and RATES of the CHRONOMETERS. (L.)

1822 Month.		Times by Chronometer 391. Forenoon.			Afternoon.			Mean.			Equation of equal Altitude	Apparent Noon by Chronometer 391.			Equation of Time.	Mean Noon by Chronometer 391.			Chronometer slow or fast for Mean Time. 391 Slow.			397 Slow.			Earnshaw Slow.			Rate per Day. 391	397	Earnshaw
		h.	′	″	h.	′	″	h.	′	″	″	h.	′	″	′ + ″	h.	′	″	h.	′	″	h.	′	″	h.	′	″	″	″	″
Apr.	20	7	45	38,6	12	59	14,6	10	22	26,6	3,0	10	23	29,6	1 02,1	10	23	31,7	1	36	28,3	1	26	31,8	1	24	11,8			
	21	8	15	44,7	12	28	21,9	10	22	03,3	3,3	10	22	06,6	1 15,2	10	23	21,8	1	36	38,2	1	26	29,7	1	24	19,7	−09,9	+02,1	−07,9
	25	7	56	30,4	12	44	33,6	10	20	32	3,2	10	20	35,2	2 02,7	10	22	37,9	1	37	22,1	1	26	23,1	1	24	45,1	11	01,6	06,4
	26	7	56	44,2	12	43	37,3	10	20	10,8	3,3	10	20	14,1	2 13,4	10	22	27,5	1	37	32,5	1	26	19,5	1	24	51,5	10,4	03,6	06,4
	27	7	56	43,5	12	42	58,8	10	19	51,1	3,4	10	19	54,5	2 23,7	10	22	18,2	1	37	41,8	1	26	17,8	1	24	56,8	09,3	01,7	05,3
	28	7	58	19	12	40	39,2	10	19	29,1	3,5	10	19	32,6	2 33,5	10	22	06,1	1	37	53,9	1	26	15,9	1	25	04,9	12,1	01,9	08,1
	29	7	58	37,2	12	39	43 6	10	19	10,4	3,5	10	19	13,9	2 42,8	10	21	56,7	1	38	03,3	1	26	12,3	1	25	09,3	10,4	02,6	05,4
May	2	7	58	30,5	12	38	18,6	10	18	24,6	3,6	10	18	28,2	3 07,7	10	21	35,9	1	38	24,1	1	26	07,1	1	25	33,1	06,9	01,7	0,59
	3	7	57	40,4	12	38	36,3	10	18	08,3	3,6	10	18	11,9	3 15	10	21	26,9	1	38	33,1	1	26	05,4	1	25	33,1	09,0	01,7	0
					Chronometer 397.						—	*Chronometer 397*			—	*Chronometer 397.*														
July	1	8	46	53,7	12	29	28,2	10	38	11	1,1	10	38	09,9	3 15,6	10	34	54,3	1	47	28,7	1	25	05,7	1	26	24,7	15,6	03,4	+09,9
	2	8	45	29,6	12	31	22,4	10	38	26	1,2	10	38	24,8	3 27,1	10	34	57,7	1	47	44,3	1	25	02,3	1	26	14,8	17,3	02,7	09,2
	3	8	45	27	12	31	53,3	10	38	40,1	1,3	10	38	38,8	3 38,4	10	35	0,4	1	48	01,6	1	24	59,6	1	26	05,6	10,8	03,2	11,2
	4	8	45	24 3	12	32	24,8	10	38	54 5	1,4	10	38	53,1	3 49,5	10	35	03,6	1	48	12,4	1	24	56,4	1	25	54,4	18,1	02,9	07,9
	5	8	45	19.5	12	32	57	10	39	08,3	1,6	10	39	06,7	4 0,2	10	35	06,5	1	48	30,5	1	24	53.5	1	25	46,5	19,3	02,7	06,7
	6	8	45	12,1	12	33	30,9	10	39	21,5	1,7	10	39	19,8	4 10,6	10	35	09,2	1	48	49,8	1	24	50,8	1	25	39,8			

1822	Times by Chronometer 397.							Equation to equal Altitudes	Apparent Noon by Chronometer 397.			Equation of Time.	Mean Noon by Chronometer 397.			Chronometer Slow or Fast for Mean Time.						Rate per Day.		
Month.	Forenoon.			Afternoon.			Mean.									391 Slow.			397 Slow.			Earnshaw.			391	397	Earnshaw
	h.	′	″	h.	′	″	h.	′	″	″	h.	′	″	′ — ″	h.	′	″	h.	′	″	h.	′	″	″	″	″
July 7	8	45	04,9	12	34	07,3	10	39	36,1	1,8	10	39	34,3	4 20,7	10	35	13,6	1	49	11,4	1	24	46,4	1	25	31,4	— 21,6	+ 04,4	+ 08,4
8	8	44	53,4	12	34	42,1	10	39	47,8	1,9	10	39	45,9	4 30,5	10	35	15,4	1	49	22,6	1	24	44,6	1	25	25,1	11,2	01,8	06,3
9	8	44	40,9	12	35	17,8	10	39	59,4	2,0	10	39	57,4	4 39,8	10	35	17,6	1	49	32,4	1	24	42,4	1	25	17,4	09,8	02,2	07,7
10	8	44	29,9	12	35	56,3	10	40	13,1	2,0	10	40	11,1	4 48,6	10	35	22,5	1	49	52,2	1	24	37,2	1	25	07,2	19,9	05,2	10,2
11	8	44	13,5	12	36	34,6	10	40	24,0	2,1	10	41	21,9	4 57,4	10	36	24,5	1	50	06,5	1	24	35,5	1	25	01,5	14,3	01,7	05,7
12	8	45	18,1	12	35	50,6	10	40	34,4	2,2	11	40	32	5 05,6	10	45	26,4	1	50	15,6	1	24	33,6	1	24	56,6	09,1	01,9	04,9
13	8	43	40,5	12	37	52,6	10	40	46,5	2,4	10	40	44,1	5 13,3	10	45	30,8	1	50	31,7	1	24	29,2	1	24	45,2	16,1	04,4	11,2
14	8	43	22	12	38	34	10	40	58	2,2	10	40	55,8	5 20,5	10	45	35,3	1	50	47,7	1	24	24,7	1	24	33,2	16	04,5	12
15	8	43	03,4	12	39	15	10	41	09,2	2,5	10	41	06,7	5 27,6	10	35	39,1	1	51	04,9	1	24	20,9	1	24	23,9	17,2	03,8	09,3
16	8	46	30,9	12	36	06,9	10	41	18,9	2,6	10	41	16,3	5 34,0	10	35	42,3	1	51	20,7	1	24	17,7	1	24	11,7	15,8	03,2	12,2
17	8	42	16,9	12	40	37,6	10	40	27,3	2,7	10	41	24,6	5 40	10	35	44,3	1	51	31,4	1	24	15,4	1	24	04,4	10,7	02,3	07,3
1823				*Earnshaw.*					—	*Earnshaw.*			—	*Earnshaw.*														
April 10	9	18	26	2	34	14,5	11	56	20,3	2,5	11	56	22,8	1 33,1	11	54	49,7		″			″		0	05	10,3			
11	9	20	51,9	2	31	43,6	11	56	17,8	2,6	11	56	20,4	1 16,6	11	55	03,8		″			″		0	04	56,2	″	″	14,2

RESULTS OF THE OBSERVATIONS

At BENCOOLEN

For the TIME, LONGITUDE, and RATES of CHRONOMETERS in 1822. (R.)

1822 Month.	Mean of Times per Chronometer by No. 391.	Altitudes Corrected for Error of Sextant.	Refraction.	Parallax.	True Altitude of the Sun's Centre.	Sun's Declinations.	Apparent Time.	Equation of Time.	Mean Time.	Chronometers Slow or Fast for Mean Time.			Rate per Day.		
										No. 391 Slow.	No. 397 Slow at Noon.	Earnshaw Slow at Noon.	No. 391	No. 397	Earnshaw.
	h. ′ ″	° ′ ″	″	″	° ′ ″	° ′ ″	h. ′ ″	′ ″	h. ′ ″	h. ′ ″	h. ′ ″	h. ′ ″	″	″	″
			−	+				−							
April 20	1 22 32,7	43 0 15	61	6,7	42 43 24,6	11 21 52,2 N.	3 0 2,4	1 3,8	2 58 58,6	1 36 25,9	1 26 27,87	1 24 7,87			
23	18 24 21	28 45 2,5	103,7	8	28 59 22	12 37 7,3	20 3 22 3	1 49,5	20 1 32,8	1 37 11,8	1 26 28,93	1 24 41,43	− 12,37	− 0,26	− 8,39
30	18 35 57,1	31 32 22,7	93	7,7	31 46 50,8	14 51 19,2	20 17 16,3	2 58,5	20 14 17,8	1 38 20,7	1 26 12,99	1 25 24,24	9,84	+ 2,25	6,10
May 5	18 1 42,3	23 27 18,5	130,9	8	23 41 7,8	16 19 25,8	19 44 11,4	3 32,6	19 40 38,8	1 38 56,5	1 25 57,81	1 25 53 81	7,28	3,03	5,94
6	18 25 58	29 6 19,37	102	8	29 20 37,3	16 36 36,2	29 8 40 8	3 37,8	20 5 3	1 39 5	1 25 56,36	1 26 2,36	8,36	1,45	8,55
7	18 9 42,3	25 18 36,87	120,1	8	25 32 36,5	16 53 2,8	19 52 38,7	3 42,4	19 48 56 3	1 39 14	1 25 55,09	1 26 9 59	9,11	1,27	7,23
8	18 49 22,3	34 26 7,7	82,5	7,5	34 40 44,1	17 9 51,3	20 32 33,1	3 46,5	20 28 46,6	1 39 24 3	1 25 53,77	1 26 17,27	10,03	1,32	7,68

By Equal Altitudes.

1823 Month.	Times by Chronometer No. 391.			Equation of equal Altitudes.	Apparent Noon by Chronometer.	Equation of Time.	Mean Noon by Chronometer	Chronometers Slow or Fast for Mean Time.			Rate per Day.		
	Forenoon.	Afternoon.	Mean.					No. 391 Slow.	No. 397 Slow.	Earnshaw Slow.	No. 391.	No. 397.	Earnshaw
	h ′ ″	h. ′ ″	h ′ ″	″	h. ′ ″	′ ″	h. ′ ″	h. ′ ″	h. ′ ″	h. ′ ″	″	″	″
May 13	8 15 32,5	12 16 54,41	10 16 13,5	+ 3,48	10 16 16,98	+ 3 56,81	10 20 13,79	1 39 46,21	1 25 35,21	1 26 33,21			
14	8 13 41,58	12 17 23,25	10 16 7,83	3,46	10 16 11,29	3 57,77	10 20 9,06	1 39 50,94	1 25 34,94	1 26 38,94	− 4,73	+ 0,27	− 5,73
15	8 18 6,83	12 13 53,66	10 16 2,19	3,44	10 16 5,63	3 58,14	10 20 3,77	1 39 56,23	1 25 32,23	1 26 44,23	5,29	2,71	5,29

Month.	Mean Times for Chronometer No. 391.	Altitudes Corrected for error of the Sextant.	Refraction.	Parallax.	True Altitude of the Sun's Centre.	Sun's Declination.	Apparent Time.	Equation of Time.	Mean Time.	Chronometers Slow or Fast for Mean Time.		Rate per Day.	
										No. 391.	Earnshaw.	No. 391	Earnshaw
1823	h. ' "	° ' "	"	+ "	° ' "	° ' "	h. ' "	' "	h. ' "	h. ' " Slow.	h. ' " Slow.	"	"
April 11	17 33 45,83	61 30 10	32	4	61 29 42	8 21 35,23 N.	22 16 36,91	+ 1 1,47	22 17 38,38	4 43 52,55	0 4 45,55		
13	17 29 42,91	60 30 10	31	4	60 29 43	9 5 22,81	22 13 30,82	0 29,73	22 14 00,55	4 44 17,64	0 4 7,64	— 17,7	+ 18,99
	Earnshaw												
29	20 52 18,5	57 30 1,25	36	4,5	57 13 35,75	14 29 43,3	22 10 16,05	— 2 56,01	22 7 26,04	4 47 11,54	1 15 7,54	14,53	14,5
30	20 53 49	57 37 31,2	36,5	4,5	57 21 5,7	14 48 14,1	22 11 40,56	2 58,49	22 8 42,06	4 47 26,06	1 14 53,06	18,55	12,7
May 1	20 38 23	54 15 1,25	40,75	5,2	53 58 32,4	15 6 18,1	21 56 10,96	3 16,4	21 53 4,56	4 47 44,56	1 14 41,56	19,28	13,59
2	21 9 5,16	60 15 1,25	32,75	4	59 58 39,7	15 24 40,7	22 26 46,82	3 13,98	22 23 32,84	4 48 03,68	1 14 27,68	25,88	8,97
3	20 33 55	53 00 2,91	43	5,4	52 43 32,5	15 41 59,5	21 51 34,59	3 26,62	21 48 13,97	4 48 29,47	1 14 18,97	16,7	13,55
4	21 12 40,16	60 31 21,25	32,5	4	60 15 00,18	15 59 56,9	22 30 12,39	3 27	22 26 45,39	4 48 46,23	1 14 5,23	14,24	10,88
5	19 58 34,75	44 21 12,08	58,3	6,5	44 20 19,28	16 16 16,08	21 14 2,06	3 32,39	21 10 29,67	4 49 0,92	1 13 54,92	14,96	13,72
6	19 56 25	44 10 39,58	58,65	6,5	44 9 47,4	16 33 14,09	21 13 43,67	3 37,47	21 10 16,2	4 49 16,2	1 13 41,2	11,96	14,00
7	20 15 26,25	48 10 18,44	50,67	6,25	48 9 34	16 50 8,78	21 32 35,83	3 42,02	21 28 53,26	4 49 28,01	1 13 27,01	11,72	15,15
8	20 15 32	48 1 50,94	51	6,25	48 1 6,1	17 6 33,39	21 32 29,82	3 45,96	21 28 43,86	4 49 39,86	1 13 11,86	14,92	12,37
9	20 15 45,5	47 55 34 37	51,17	6,2	47 54 49,4	17 22 41,62	21 32 34,28	3 49,29	21 28 44,99	4 49 54,49	1 12 59,49	15,83	15,35
10	20 16 39,25	47 56 54,37	51	6,25	47 56 9,6	17 38 33,78	21 33 15,48	3 52,09	21 29 23,39	4 50 10,64	1 12 44,14		

For the LONGITUDE *of* BENCOOLEN. *(L.)*

Chronometer 391.

					h.	′	″
April	20	Mean Noon at Bencoolen	Chronometer	*Slow*	1	36	28,3
	21	,, at Bencoolen	,,	*Slow*	1	36	38,2
	25	,, at Bencoolen	,,	*Slow*	1	37	22,1

Chronometer 397.

April	20	Mean Noon at Bencoolen	Chronometer	*Slow*	1	26	31,8
	21	,, at Bencoolen	,,	*Slow*	1	26	29,7
	25	,, at Bencoolen	,,	*Slow*	1	26	23,1

Chronometer Earnshaw.

April	20	Mean Noon at Bencoolen	Chronometer	*Slow*	1	24	11.8
	21	,, at Bencoolen	,,	*Slow*	1	24	19,7
	25	,, at Bencoolen	,,	*Slow*	1	24	45,1

Rates of the CHRONOMETERS *at* BENCOOLEN.

1822 Month.		Rates of the Chronometers. 391	397	Earnshaw.	Remarks.
		″	″	″	
April	20				
	21	— 09,9	+ 02,1	— 07,9	
	25	43,9	06,6	25,4	Interval of 4 days.
	26	10,4	03,6	06,4	
	27	09,3	01,7	05,3	
	28	11,1	02,9	07,1	
	29	10,4	02,6	05,4	
May	2	20,8	05,2	23,8	Interval of 3 days.
	3	09,0	01,7	00,1	
		09,6	02,03	06,26	Mean at Bencoolen.
		11,1	03,06	03,56	Mean at Madras.
Mean Rates..		10,35	02,55	04,91	Of Madras and Bencoolen.

For the LONGITUDE *of* BENCOOLEN. *(R.)*

1822							h.	'	"
					Chronometer 391.				
April	20	at	2	59	Mean Noon at Bencoolen	Chronometer *Slow*	1	36	25,9
	23	at	20	1	,, at Bencoolen	,, *Slow*	1	37	11,8
	30	at	20	14	,, at Bencoolen	,, *Slow*	1	38	20,7
					Chronometer 397.				
April	20				Mean Noon at Bencoolen	Chronometer *Slow*	1	26	27,87
	24				,, at Bencoolen	,, *Slow*	1	26	28,93
May	6				,, at Bencoolen	,, *Slow*	1	25	57,81
					Chronometer Earnshaw.				
April	20				Mean Noon at Bencoolen	Chronometer *Slow*	1	24	7,87
	24				,, at Bencoolen	,, *Slow*	1	24	41,43
May	6				,, at Bencoolen	,, *Slow*	1	25	53,81

RATES of the CHRONOMETERS at BENCOOLEN.

1822 Month.	Rates of the Chronometers. 391	397	Earnshaw.	Remarks.
	"	"	"	
April 20 to the 24	— 12,37	— 0,26	— 8,39	
May 1	9,84	+ 2,25	6,10	
6	7,28	3,03	5,94	
7	8,36	1,45	8,55	
8	9,11	1,27	7,23	
9	10,03	1,32	7,68	
	6) 56,99*	6) 9,06	6) 43,89	
	9,49	1,51	6,31	Mean at Bencoolen.*
	11,1	3,06	3,56	Mean at Madras.
Mean Rates..	10,29	2,29	4,98	Of Madras and Bencoolen.

* *The old Government House.*

Difference of Longitude between the Madras Observatory and Bencoolen. (L.)

	h.	'	"
Chronometer 391.			
April 20, Chronometer Slow for Mean Time at Bencoolen	1	36	28,3
March 13, Chronometer Slow for Mean Time at Madras		01	56,6
Difference	1	34	31,7
Mean Rate of Chronometer of Madras and Bencoolen in an interval of 37 days 22 32 h. '		06	32,58
Difference of Longitude in Time between Madras and Bencoolen	1	27	59,12
April 21, Chronometer Slow for Mean Time at Bencoolen	1	36	38,2
March 13, Chronometer Slow for Mean Time at Madras		01	56,6
Difference	1	34	41,6
Mean Rate of Chronometer of Madras and Bencoolen in an interval of 38 days 22 32 h. '		06	42.93
Difference of Longitude in Time between Madras and Bencoolen	1	27	58,67
April 25, Chronometer Slow for Mean Time at Bencoolen	1	37	22,1
March 13, Chronometer Slow for Mean Time at Madras		01	56.6
Difference	1	35	25,5
Mean Rate of Chronometer of Madras and Bencoolen in an interval of 42 dyas 22 32 h. '		07	24 33
Difference of Longitude in Time between Madras and Bencoolen	1	28	01.17
Chronometer 397.			
April 20, Chronometer Slow for Mean Time at Bencoolen	1	26	31,8
March 13, Chronometer Slow for Mean Time at Madras			05,5
Difference	1	26	26,3
Mean Rate of Chronometers of Madras and Bencoolen in an interval of 37 days 22 32 h. '		01	36,72
Difference of Longitude in Time btween Madras and Bencoolen	1	28	03,02
April 21, Chronometer Slow for Mean Time at Bencoolen	1	26	29,7
March 13, Chronometer Slow for Mean Time at Madras			05,5
Difference	1	26	24,2
Mean Rate of Chronometers of Madras and Bencoolen in an interval of 38 days 22 32 h. '		01	39,27
Difference of Longitude in Time between Madras and Bencoolen	1	28	03,47
April 25, Chronometer Slow for Mean Time at Bencoolen	1	26	23,1
March 13, Chronometer Slow for Mean Time at Madras			05,5
Difference	1	26	17,6
Mean Rate of Chronometer of Madras and Bencoolen in an interval of 42 days 22 32 h. '		01	49,47
Difference of Longitude in Time between Madras and Bencoolen	1	28	07,07

Chronometer Earnshaw.

	h.	'	"
April 20, Chronometer Slow for Mean Time at Bencoolen	1	24	11,8
March 13, Chronometer Slow for Mean Time at Madras		05	46,7
Sum	1	29	58,5
Mean Rate of Chronometer of Madras and Bencoolen in an interval of 37 days (h. 22 32)		03	06,24
Difference of Longitude in Time between Madras and Bencoolen	1	26	52,26

	h.	'	"
April 21, Chronometer Slow for Mean Time at Bencoolen	1	24	19,7
March 13, Chronometer Slow for Mean Time at Madras		05	46,7
Sum	1	30	06,4
Mean Rate of Chronometer of Madras and Bencoolen in an interval of 38 days (h. 22 32)		03	11,15
Difference of Longitude in Time between Madras and Bencoolen	1	26	55,25

	h.	'	"
April 25, Chronometer Slow for Mean Time at Bencoolen	1	24	45,1
March 13, Chronometer Slow for Mean Time at Madras		05	46,7
Sum	1	30	31,8
Mean Rate of Chronometer of Madras and Bencoolen in an interval of 42 days (h. 22 32)		03	30,79
Difference of Longitude in Time between Madras and Bencoolen	1	27	01,01

Difference of Longitude by Chronometers between the Madras Observatory and Bencoolen.

Chronometer 391.

	h.	'	"	h.	'	"
By 1st Set of Observations	1	27	59,12			
2d "	1	27	58,67			
3d "	1	28	01,17			
Mean..				1	27	59,65

Chronometer 397.

By 1st Set of Observations	1	28	03,02			
2d "	1	28	03,47			
3d "	1	28	07,07			
Mean..				1	28	04,52

Chronometer Earnshaw.

By 1st Set of Observations	1	26	52,26			
2d "	1	26	55,25			
3d "	1	27	01,01			
Mean..				1	26	56,17

Difference of Longitude between the Madras Observatory *and* Bencoolen. *(R.)*

Chronometer 391.

	h.	′	″
April 20, Chronometer Slow for Mean Time at Bencoolen	1	36	25,9
March 13, Chronometer Slow for Mean Time at Madras	0	1	56,6
Difference	1	34	29,3
Mean Rate of Chronometer of Madras and Bencoolen in an interval of 38 days 1 31	0	6	31,66
Difference of Longitude in Time between Madras and Bencoolen	1	27	57 64

April 23, Chronometer Slow for Mean Time at Bencoolen	1	37	11,8
March 13, Chronometer Slow for Mean Time at Madras	0	1	56 6
Difference	1	35	15,2
Mean Rate of Chronometer of Madras and Bencoolen in an interval of 41 days 18 33	0	7	9,84
Difference of Longitude in Time between Madras and Bencoolen	1	28	5

April 30, Chronometer Slow for Mean Time at Bencoolen	1	38	20,7
March 13, Chronometer Slow for Mean Time at Madras	0	1	56,6
Difference	1	36	24,1
Mean Rate of Chronometer at Madras and Bencoolen in an interval of 48 days 18 46	0	8	21,95
Difference of Longitude in Time between Madras and Bencoolen	1	28	2,25

Chronometer 397.

April 20, Chronometer Slow for Mean Time at Bencoolen	1	26	27,87
March 13, Chronometer Slow for Mean Time at Madras	0	0	5 5
Difference	1	26	22,37
Mean Rate of Chronometer at Madras and Bencoolen in an interval of 37 days 22 32	0	1	26,88
Difference of Longitude in Time between Madras and Bencoolen	1	27	49,25

April 24, Chronometer Slow for Mean Time at Bencoolen	1	26	28,93
March 13, Chronometer Slow for Mean Time at Madras	0	0	5,5
Difference	1	26	23,43
Mean Rate of Chronometer at Madras and Bencoolen in an interval of 41 days 22 32	0	1	36,04
Difference of Longitude in Time between Madras and Bencoolen	1	27	59.47

Chronometer 397.

	h.	'	"
May 6, Chronometer Slow for Mean Time at Bencoolen	1	25	57,81
March 13, Chronometer Slow for Mean Time at Madras	0	0	5,5
Difference	1	25	52,31
Mean Rate of Chronometer at Madras and Bencoolen in an interval of 53 days h. 22 32	0	2	3,52
Difference of Longitude in Time between Madras and Bencoolen	1	27	55,83

Chronometer Earnshaw.

April 20, Chronometer Slow for Mean Time at Bencoolen	1	24	7,87
March 13, Chronometer Fast for Mean Time at Madras	0	5	46,7
Sum	1	29	54,57
Mean Rate of Chronometer at Madras and Bencoolen in an interval of 37 days h. 22 32	0	3	7,04
Difference of Longitude in Time between Madras and Bencoolen	1	26	47,53

April 24, Chronometer Slow for Mean Time at Bencoolen	1	24	41,43
March 13, Chronometer Fast for Mean Time at Madras	0	5	46,7
Sum	1	30	28,13
Mean Rate of Chronometer at Madras and Bencoolen in an interval of 41 days h. 22 32	0	3	26,76
Difference of Longitude in Time between Madras and Bencoolen	1	27	1,36

May 6, Chronometer Slow for Mean Time at Bencoolen	1	25	53,81
March 13, Chronometer Fast for Mean Time at Madras	0	5	46,7
Sum	1	31	40,51
Mean Rate of Chronometer at Madras and Bencoolen in an interval of 53 days h. 22 32	0	4	25,92
Difference of Longitude in Time between Madras and Bencoolen	1	27	14,59

Difference of Longitude by Chronometers between the Madras Observatory and Bencoolen.

Chronometer 391.

	h.	'	"	h.	'	"
By 1st Set of Observations	1	27	57,64			
2d "	1	28	5			
3d "	1	28	2,25			
Mean..				1	28	1,63

Chronometer 397.

By 1st Set of Observations	1	27	49,25			
2d "	1	27	59,47			
3d "	1	27	55,83			
Mean..				1	27	54.85
Mean of two Chronometers				1	27	58,24

For the LONGITUDE *of* BENCOOLEN.

1823							h.	'	"
					Chronometer 391.				
June	6	Mean Noon at Madras			Chronometer	*Slow*	3	30	13,5
	7	,,	at	,,	,,	,,	3	30	30,5
	8	,,	at	,,	,,	,,	3	30	51,6
					Chronometer Earnshaw.				
June	6	Mean Noon at Madras			Chronometer	*Fast*	0	21	24,5
	7	,,	at	,,	,,	,,	0	21	35,5
	8	,,	at	,,	,,	,,	0	21	45,4

*RATE of the CHRONOMETERS at BENCOOLEN.**

1823 Month.	Rates of the Chronometers. 391	Earnshaw.	Remarks.
April 30 to May 1	— 14,53	+ 14,5	
2	18,55	12,17	
3	19,28	13,59	
4	25,88	8,97	
5	16,7	13,55	
6	14,24	10,88	
7	14,96	13,72	
8	11,96	14,00	
9	11,72	15,15	
10	14,92	12,37	
11	15,83	15,35	
	178,57	144,25	
Mean....	16,23	13,11	At Bencoolen.

* *Captain Watson's Garden.*

DIFFERENCE of LONGITUDE between the MADRAS OBSERVATORY and BENCOOLEN.

Chronometer 391.

		h.	'	"
May 11,	Chronometer Slow for Mean Time at Bencoolen	4	50	9,03
June 6,	Chronometer Slow for Mean Time at Madras	3	30	13,5
	Difference....	1	19	55,53
Mean Rate of Chronometer at Bencoolen and Madras in an interval of 26 days	h. ' " 1 28..	0	7	18,86
Difference of Longitude in Time between Bencoolen and Madras		1	27	14 39

	h.	'	"
May 11, Chronometer Slow for Mean Time at Bencoolen	4	50	9,03
June 7, Chronometer Slow for Mean Time at Madras	3	30	36,5
Difference	1	19	38,53
Mean Rate of Chronometer at Bencoolen and Madras in an interval of 27 days (h. 1 28)	0	7	35,7
Difference of Longitude in Time between Bencoolen and Madras	1	27	14,23

May 11, Chronometer Slow for Mean Time at Bencoolen	4	50	9,03
June 8, Chronometer Slow for Mean Time at Madras	3	30	51,6
Difference	1	19	17,23
Mean Rate of Chronometer at Bencoolen and Madras in an interval of 28 days (h. 1 28)	0	7	52,54
Difference of Longitude in Time between Bencoolen and Madras	1	27	9,97

Chronometer Earnshaw.

May 11, Chronometer Slow for Mean Time at Bencoolen	1	12	42,53
June 6, Chronometer Fast for Mean Time at Madras	0	21	24.5
Sum	1	34	7,03
Mean Rate of Chronometer at Bencoolen and Madras in an interval of 26 days (h. 1 28)	0	5	56,5
Difference of Longitude in Time between Bencoolen and Madras	1	28	10,53

May 11, Chronometer Slow for Mean Time at Bencoolen	1	12	42,53
June 7, Chronometer Fast for Mean Time at Madras	0	21	35,5
Sum	1	34	18,03
Mean Rate of Chronometer at Bencoolen and Madras in an interval of 27 days (h. 1 28)	0	6	10,38
Difference of Longitude in Time between Bencoolen and Madras	1	28	7,65

May 11, Chronometer Slow for Mean Time at Bencoolen	1	12	42,53
June 8, Chronometer Fast for Mean Time at Madras	0	21	45,4
Sum	1	34	27,93
Mean Rate of Chronometer at Bencoolen and Madras in an interval of 28 days (h. 1 28)	0	6	23,86
Difference of Longitude in Time between Bencoolen and Madras	1	28	4,07

Difference of Longitude by Chronometers between the Madras Observatory and Bencoolen.

Chronometer 391.

	h.	'	"
By 1st Set of Observations	1	27	14,39
2d "	1	27	14,23
3d "	1	27	9,97
Mean	1	27	12,86

Chronometer Earnshaw.

By 1st Set of Observations	1	28	10,53
2d "	1	28	7,65
3d "	1	28	4,07
Mean	1	28	7,42
Medium of Two Chronometers	1	27	40,14

RESULTS OF THE OBSERVATIONS

At BENCOOLEN.

For the TRUE BEARING of FORT MARLBRO' TURRET

And the VARIATION of the COMPASS. (L.)

Month.	Apparent Time.	Horary Angle.	Dist. Sun's N Limb and Fort Marlbro' Turret corrected for Error and Semi diameter.	Azimuth.	Horizontal Arc.	True Bearing.	Magnetic Bearing.	Variation of the Compass.
	h. ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
May 30	6 25 13	83 41 45	42 51 42	67 56 25	42 39 27	25 16 58	23 58 36	1 18 22 E
July 4	6 22 15,5	84 26 08	41 40 03,5	66 41 25	41 31 22	25 10 03	23 58 36	1 11 27
5	6 25 10	83 42 30	41 41 36,6	66 42 28	41 29 45	25 22 43	23 58 36	1 14 07
7	6 26 21,5	83 24 38	41 51 22,6	66 52 06	41 38 02	25 14 04	23 58 36	1 15 28
11	6 26 0	83 30 00	42 20 08,7	67 21 57	42 07 12	25 14 45	23 58 36	1 16 09
13	6 25 23,1	83 39 14	42 35 55,8	67 36 58	42 23 40	25 13 58	23 58 36	1 15 22
					Mean..	25 13 45 NE		1 15 09 E

For the VARIATION of the COMPASS. (R.)

1822 Month.	Time.	Sun's Declination.	True Amplitude.	Magnetic Bearing by the Compass.	Variation.
	h. ′ ″	° ′ ″	° ′	° ′	° ′
May 26	5 43 51	21 4 31,9 N.	N. 68 52½ W.	N. 70 15¼ W.	1 23¼ E.
	5 47 1	21 5 0),2	68 52	70 30¼	1 38¼

VARIATION.

	° ′
By 1st Observation.....	1 23¼ E.
2d Observation.....	1 38¼
Mean..	1 31 E.

STATION of OBSERVATION from the S. E. end of the BASE 399,9 feet. (L.)

Triangles.	Angles.	Distances from the intersected objects in	
	° ′ ″		Feet.
Station of Observation.....	117 13 00	Fort Marlborough Turret.....	807,6
S. E. end of the Base.....	43 02 00		1052,4
Fort Marlborough Turret.....	19 45 00		

The LATITUDE *and* LONGITUDE *of* FORT MARLBOROUGH TURRET, *deduced from the Station of* OBSERVATION *in* LATITUDE 3° 47' 38" S. *and* LONGITUDE 102° 15' 41" E.

Station at	Names.	Bearings referred to the Meridian.	Distance.	Distances on the Meridian.	Distances on the Perpendicular.	Latitude.	Longitude from Station of Observation	Longitude from Greenwich.
° Station of Observation.	Fort Marlbro' Turret	° ' " 25 13 45 N E	*feet.* 807,6	*feet.* 730,5 N	*feet.* 344,3 E	° ' " 3 47 30,8 S	° ' " 0 0 03, E	° ' " 102 15 44 E

FORT MARLBOROUGH TURRET from RAT ISLAND, 31202 *feet.**

Triangles.	Angles.	Distances from the intersected objects in	Feet.	Miles.
	° ' "			
Fort Marlborough Turret....	123 48 15	North high Peak (or Lye Peak,	197808	37,463
Rat Island.....	49 19 30		216724	41,046
North high Peak (Lye Peak)..	6 52 15			
Fort Marlborough Turret....	138 19 0	Conspicuous high Hill or Goonum	148863	28,194
Rat Island.....	34 48 40	Pallee.....	173412	32,843
Conspicuous high Hill.....	6 52 20			
Fort Marlborough Turret....	166 19 15	Sugar Loaf Peak, or Goonum	104656	19,821
Rat Island	10 33 0	Beakoo.....	135174	25,601
Sugar Loaf Peak.....	3 07 45			
Fort Marlborough Turret....	166 15 15	Lion's Rump.....	69558	13,174
Rat Island	9 30 0		100141	18,966
Lion's Rump.....	4 14 45			
Fort Marlborough	64 41 0	Buffalo point.....	49745	9,421
Rat Island	77 32 50		46051	8,721
Buffalo point.....	37 46 10			
Fort Marlborough	22 44 0	Mr. Presgrave's (Staff on Tree)..	2381	0,451
Rat Island	1 49 0		28617	5,420
Mr. Presgrave's (Staff).....	155 27 0			

At PULO BAY.

EAST END of the BASE from WEST END of the BASE, 3442,2 *feet.*

Triangles.	Angles.	Distances from the intersected objects in	Feet.	Miles.
	° ' "			
East end of the Base.....	61 22 30	Rat Island.....	43930	8,32
West end of the Base.....	114 32 15		42389	8,028
Rat Island.....	4 05 15			

* The distance from Fort Marlborough to Rat Island is obtained by the difference of Longitude, and the Bearing of Rat Island from Fort Marlborough Turret.

Triangles.	Angles.	Distances from the intersected objects in	Feet.	Miles.
	° ' "			
East end of the Base.....	109 28 0	Hamilton's Tomb.....	36136	6,844
West end of the Base.....	65 33 30		37424	7,088
Hamilton's Tomb.....	4 58 30			
East end of the Base.....	167 08 0	Argyle Hill.....	31891	6,04
West end of the Base.....	11 37 15		35256	6,677
Argyle hill.....	1 14 45			

The LATITUDE *and* LONGITUDE *of* PLACES *in the vicinity of* BENCOOLEN, *deduced from* FORT MARLBOROUGH TURRET *in* LATITUDE 3° 47' 31" S. *and* LONGITUDE 102° 15' 44" E.

Stations at	Names of Places.	Bearings referred to the Meridian of Fort Marlborough Turret.	Distances	Distance on the Meridian	Distance on the Perpendicular.	Latitude.	Longitude from Fort Marlborough Turret.	Longitude from Greenwich.
		° ' "	feet.	feet.	feet.	° ' "	° ' "	° ' "
Fort Marlbro'	Rat Island.....	55 0 15 s. W	31202	17895 s	25560 W	3 50 29 s	0 4 12 W	102 11 32 E
	N. Peak or Lys Peak	1 11 30 N W	197808	197766 N	4114 W	3 14 48	0 0 41	102 15 03
	Goonum Pallee.....	13 9 15 N E	148863	144858	34298 E	3 23 33	0 5 39 E	102 21 23
	Goonum Benko.....	41 19 30	104656	78594	69107 E	3 34 31	0 11 22	102 27 06
	Lion's Rump	68 45 0 s E	69558	25210 s	64829 E	3 51 41	0 10 39	102 26 23
Rat Island.	Mr. Presgrave's Tree	32 14 15 s W	2381	2014	1270 W	3 47 51	0 0 13 W	102 15 31
	W. end of the Base..	52 28 59 s E	42389	25815	33622 E	3 54 45 s	0 1 20 E	102 17 04 E
	E. end of the Base....	56 37 46 s E	43930	24164	36687 E	3 54 28 s	0 1 50	102 17 34
W. end of the Base.	Hamilton's Tomb....	3 30 14 N W	37424	37354	2287 W	3 48 34 s	0 0 57	102 16 41
	Argyle Hill.....	50 26 01 N E	35256	22457	27179 E	3 51 02 s	0 5 47	102 21 31

Latitude of Rat Island, (By the Stars.) (L)

1822 Month.	Names.	Meridian Altitude.	Corrected Refraction.	Mean Declination.	Nutation	Aberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude South.
		° ' "	' "	° ' "	"	"	° ' "	° ' "	° ' "	° ' "
May 16	γ Ursæ Maj....	35 58 51,5 N	1 12,6	50 12 11,8 N	7,2	5,2	35 57 38,9 N	54 02 21,1 s	50 12 09,7 N	3 50 11,4
	β Centauri.....	34 21 09 s	1 17,2	59 30 38 s	7,4	7,2	34 19 51,8 s	55 40 08,2 N	59 30 52,6 s	3 50 44,4
	α Centauri.....	33 45 26,5 s	1 19,2	60 06 46,2	8,1	5,8	33 44 07,3	56 15 52,7	60 07 0,0	3 51 07,3

By the Sun.

1822 Month.	Names.	Meridian Altitude.	Corrected Refraction.	Parallax.	Sun's Semi Diameter.	True Meridian Altitude of Sun's Centre.	Zenith Distance.	Declination.	Latitude
		° ' "	' "	' "	' "	° ' "	° ' "	° ' "	° ' "
May 16	Sun's L. L....	66 56 14 N.	0 22,1	0,04	15 50,2	67 11 46,1 N	22 48 13,9 s	18 58 07,0 N	3 50 06

Results of the Observations

For the Latitude of Rat Island. (L.)

By the Northern Stars.	° ′ ″	*By the Southern Stars.*	° ′ ″
η Ursæ Maj.....	3 50 11,4 s.	β Centauri.....	3 50 44,4 s.
Sun.....	3 50 06,0	α Centauri.....	3 51 07,3
Mean..	3 50 08,7	Mean..	3 50 56,35 s.

Latitude of Rat Island by the Northern Stars....	3 50 08,7 s.
do. do. Southern Stars....	3 50 56,35
Mean....	3 50 32,5 s.

For the Variation of the Compass.

1822 Month.	Time.	Sun's Declination.	True Amplitude.	Magnetic Bearing by the Compass.	Variation.
	h. ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
May 16	18 8 20	19 8 39,8 N.	N. 70 48 37,7 E.	N. 69 14 10 E.	1 34 27 E.

At Rat Island

For the Time, and Longitude. (L.)

1822 Month.	Times by Chronometer 391. Forenoon.	Afternoon.	Mean.	Equation of equal Altitudes.	Apparent Noon by Chronometer 391.	Equation of Time.	Mean Noon by Chronometer.	Chronometers Slow or Fast by Mean Time. 391 Slow.	397 Slow.	Earnshaw Slow.
	h. ′ ″	h. ′ ″	h. ′ ″	+ ″	h. ′ ″	″	h. ′ ″	h. ′ ″	h. ′ ″	h ′ ″
May 16	8 15 12	12 17 16,5	10 16 14,3	3,4	10 16 17,7	3 57,9	10 20 15,6	1 39 44,4	1 25 12,4	1 26 31,4

At Rat Island.

For the Time, and Longitude. (R.)

1822 Month.	Times by Chronometer 397. Forenoon.	Afternoon.	Mean.	Equation of equal Altitudes.	Apparent Noon by Chronometer.	Equation of Time.	Mean Noon by Chronometer.	Chronometers Slow or Fast for Mean Time. No. 391.	No. 397.	Earnshaw.
	h. ′ ″	h. ′ ″	h. ′ ″	″	h. ′ ″	h. ′	h. ′ ″	h. ′ ″	h. ′ ″	h. ′ ″
May 16	8 15 12	12 17 16,5	10 16 14,25	+3,41	10 16 17,66	+ 3 57,91	10 20 15,57	1 39 44,43	1 25 12,43	1 26 31,43

Difference of Longitude between Bencoolen and Rat Island. (L.)

Chronometer 391.

	h. ′ ″
May 16, Chronometer Slow for Mean Time at Rat Island.....	1 39 44,4
16, Chronometer Slow for Mean Time at Bencoolen.....	1 40 02,2
Difference of Longitude in Time between Bencoolen and Rat Island.....	0 0 17,8

Chronometer 397.

May 16, Chronometer Slow for Mean Time at Rat Island	1	25	12,4
16, Chronometer Slow for Mean Time at Bencoolen	1	25	29 5
Difference of Longitude in Time between Bencoolen and Rat Island	0	0	17,1

Chronometer Earnshaw.

May 16, Chronometer Slow for Mean Time at Rat Island	1	26	31,4
16, Chronometer Slow for Mean Time at Bencoolen	1	26	50,0
Difference of Longitude in Time between Bencoolen and Rat Island	0	0	18,6

Difference of Longitude in Time by Chronometer 391	00	00	17,8
Difference of Longitude in Time by Chronometer 397	00	00	17,1
Difference of Longitude in Time by Chronometer Earnshaw	00	00	18,6
Mean..	00	0	17,83

	°	′	″
Difference of Longitude in Degrees between Bencoolen and Rat Island	0	4	12

The same as given by the Triangles.

LATITUDE OF TAPPANOOLY ISLAND.

1822 Month.	Stars Observed.	Meridian Altitude.	Corrected Refraction	Mean Declination.	Nutation.	Aberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude North.
		° ′ ″	′ ″	° ′ ″	″	″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
Aug. 11	Antares	62 14 43 S	0 27,5	*			62 14 15,5 S	27 45 44,5 N	26 01 49,9 S	1 43 54,6
13	γ Draconis.....	40 14 03 N	1 02,2	*			40 13 00,8 N	49 46 59,2 S	51 30 57,9 N	1 43 58,7
	α Lyræ	53 07 15,5	0 39,5	*			53 06 36	36 53 24	38 37 34,8	1 44 10,8
15	Antares	62 14 38 S	0 27,5	*			62 14 10,5 S	27 45 49,5 N	26 01 49,9 S	1 43 59,6
	ε Scorpionis....	54 19 18	0 37,9	33 57 34,1 S	+ 3,1	+ 4,8	54 18 40,1	35 4 19,9	33 57 47	1 43 32,9
	λ Scorpionis....	51 19 10,5	0 42,3	36 58 02,4	7,6	4,8	51 18 28,2	38 41 31,8	36 58 14,8	1 43 17,0
	γ Draconis.....	40 13 58 N	1 02,2	*			40 12 55,8 N	49 47 04,2 S	51 30 58,7 N	1 43 54,5
	α Lyræ.	53 07 05,5	0 39,5	*			53 06 26	36 53 34	38 37 35,2	1 44 01,2
17	γ Draconis.....	40 14 15,5	1 02,2	*			40 13 13,3	49 46 46,7	51 30 58,7	1 44 12,0
21	γ Draconis.....	40 14 0,5	1 02,2	*			40 12 58,3	49 47 01,7	51 30 59,4	1 43 57,7
	α Lyræ	53 07 18	0 39,5	*			53 06 38,5	36 53 21,5	38 37 36,3	1 44 14,8
22	γ Draconis	40 13 55,5	1 02,2	*			40 12 53,3	49 47 06,7	51 30 59,5	1 43 52,8
	α Lyræ	53 07 18	0 39,5	*			53 06 38,5	36 53 21,5	38 37 36,5	1 44 15
	β Lyræ	58 34 35,5	0 32,5	33 09 41,4 N	− 5,7	+ 13,1	58 34 03,4	31 25 56,6	33 09 48,8	1 43 52,2
	ζ Sagittarii	58 09 30,5 S	0 32,5	30 07 41,1 S	+ 5,5	+ 0,6	58 08 58 S	31 51 02 N	30 07 47,2	1 43 14,8
26	λ Scorpionis....	51 19 05,5	0 42,3	36 58 02,5	7,5	5,0	51 18 23,2	38 41 36,8	36 58 15	1 43 21,8
	ε Sagittarii	53 49 35,5	0 38,3	34 27 28,7	+ 6,5	− 0,1	53 48 57,2	36 11 02,8	34 27 35,1	1 43 27,7
Sept. 1	λ Scorpionis....	51 19 05,5	0 42,3	36 58 02,6	7,5	+ 4,9	51 18 23,2	38 41 36,8	36 58 15	1 43 21,8
	γ Draconis.....	40 14 03 N	1 02,2	*			40 13 00,8 N	49 46 59,2 S	51 31 00,8	1 44 01,6
	ε Sagittarii....	53 49 10,5 S	0 38,3	34 27 28,5	6,4	− 0,6	53 48 32,2 S	36 11 27,8 N	34 27 34,3 S	1 43 53,5
	α Lyræ	53 07 05,5 N	0 39,5	*			53 06 26 N	36 53 34 S	38 37 38,1 N	1 44 04,1
	ζ Sagittarii	58 09 15,5 S	0 32,5	30 07 41 S	+ 5,4	+ 2,7	58 08 43,0	31 51 17 N	30 07 49,1 S	1 43 27,9
	β Cygni	64 08 55,5 N	0 25,8	27 35 25 N	− 4,5	12,8	64 08 29,7 N	25 51 30,3 S	27 35 33,3 N	1 44 03
	δ Cygni	47 02 38	0 48,4	44 41 5,7	5,0	14,0	47 01 49,6	42 58 10,4	44 42 06,4	1 43 56
	γ Cygni.....	52 03 05,5	0 40,9	39 41 32,2	2,8	12,2	52 02 24,6	37 57 35,4	39 41 41,6	1 44 05,2
	α Cygni.....	47 05 25	0 49,1	*			47 04 35,9	42 55 24,1	44 39 15	1 43 50,9
	α Gruis	40 28 48 S	1 02,0	47 48 45,9 S	− 0,9	− 2,9	40 27 46 S	49 32 14 N	47 48 42,1 S	1 43 31,9
	Fomalhaut....	57 43 18 S	0 33,1	*	+	+	57 42 44,9	32 17 15,1	30 33 24,6	1 43 50,5
2	λ Scorpionis....	51 19 13	0 42,3	36 58 02	7,5	4,9	51 18 30,7	38 41 29,3	36 58 15	1 43 14,3
	γ Draconis.....	40 13 58 N	1 02,2	*			40 12 55,8 N	49 47 04,2 S	51 31 00,8 N	1 43 56,6
	ε Sagittarii.....	53 49 28 S	0 38,3	34 27 28,7	6,4	− 0,7	53 48 49,7 S	36 11 10,3 N	34 27 34,4 S	1 43 35,9
	α Lyræ	53 07 08 N	0 39,5	*			53 06 28,5 N	36 53 31,5 S	38 37 38,2 N	1 44 06,7
	ζ Sagittarii	58 09 13 S	0 32,5	30 07 41,0	5,4	+ 3,	58 08 40,5 S	31 51 19,5 N	30 07 49,4 S	1 43 30,1
	α Sagittarii	47 20 28	0 48,9	40 56 25,1	4,8	5,0	47 19 39,1	42 40 20,9	40 56 34,9	1 43 46
	β Cygni	64 08 55,5 N	0 25,8	27 35 24,9 N	− 4,4	13,0	64 08 29,7 N	25 51 30,3 S	27 35 33,5 N	1 44 03,2
	δ Cygni.....	47 02 28	0 48,4	44 41 57,2	4,9	14,3	47 01 39,6	42 58 20,4	44 42 06,6	1 43 46,2
	α Pavonis	31 0 15,5 S	1 28,4	57 17 48,7 S	+ 2,9	4,9	30 58 47,1 S	59 01 12,9 N	57 17 56,5 S	1 43 16,4
	γ Cygni	52 03 0,5 N	0 40,9	39 41 32,0 N	− 2,7	12,5	52 02 19,6 N	37 57 40,4 S	39 41 41,8 N	1 44 01,4
	α Cygni	47 05 23	0 49,1	*			47 04 33,9	42 55 26,1	44 39 14,7	1 43 48,6
	α Gruis.....	40 28 48 S	1 02	47 48 45,9 S	− 0,9	− 3,0	40 27 46 S	49 32 14 N	47 48 42 S	1 43 32
	Fomalhaut...	57 43 18	0 33,1	*			57 42 44,9 S	32 17 15,1	30 33 24,7	1 43 50,4
8	α Lyræ	53 07 05,5 N	0 39,5	*			53 06 26 N	36 53 34 S	38 37 39 N	1 44 05
	β Lyræ	58 34 30,5	0 32,1	33 09 41,6 N	5,6	+ 15,5	58 33 58,4	31 26 01,6	33 09 51,5	1 43 49,9
	β Cygni	64 08 53	0 25,8	25 51 25	4,3	14,1	64 08 27,2	25 51 32,8	27 35 34,8	1 44 02

The Asterisks in the Column of "Mean Declination" are placed to shew, that the Declinations were taken from the Nautical Almanac; being there corrected for Nutation and Aberration.

Results of the Observations

For the Latitude of Tappanooly Island. (L.)

By the Northern Stars.	°	′	″		*By the Southern Stars.*	°	′	″	
γ Draconis	1	43	58,7	N.	Antares	1	43	54,6	N.
	1	43	54,5			1	43	59,6	
	1	43	57,7		ε Scorpionis	1	43	32,9	
	1	43	52,8		λ Scorpionis	1	43	17,0	
	1	44	01,6			1	43	21,8	
	1	43	56,6			1	43	21,8	
α Lyræ	1	44	10,5			1	43	14,3	
	1	44	01,2		ε Sagittarii	1	43	27,7	
	1	44	14,8			1	43	53,5	
	1	44	15,0			1	43	35,9	
	1	44	04,1		ζ Sagittarii	1	43	14,8	
	1	44	06,7			1	43	27,9	
	1	44	05			1	43	30,1	
β Lyræ	1	43	52,2		α Sagittarii	1	43	46	
	1	43	49,9		α Pavonis	1	43	16,14	
β Cygni	1	44	03,2		α Gruis	1	43	31,9	
	1	44	03,2			1	43	32,0	
	1	44	02		Fomalhaut	1	43	50,5	
δ Cygni	1	43	56			1	43	50,4	
	1	43	46,2						
γ Cygni	1	44	05,2						
	1	44	01,4						
α Cygni	1	43	50,9						
	1	43	48,6						
Mean..	1	43	59,91		Mean..	1	43	33,64	

Latitude of Tappanooly Island by the Northern Stars....	1	43	59,91	N.
do. do. Southern Stars....	1	43	33,64	
Mean....	1	43	46,78	

RESULTS OF THE OBSERVATIONS

At TAPPANOOLY.

For the TIME, LONGITUDE and RATES of the CHRONOMETERS. (L.)

1822 Month.	TIMES BY CHRONOMETER 397.			Equation to equal Altitudes.	Apparent Noon by Chronometer 397.	Equation of Time.	Mean Noon by Chronometer 397.	CHRONOMETERS SLOW OR FAST BY MEAN TIME.			RATE PER DAY.		
	Forenoon.	Afternoon.	Mean.					397 Slow.	391 Slow.	Earnshaw Slow.	397.	391.	Earnshaw
	h. ′ ″	h. ′ ″	h. ′ ″	″	h. ′ ″	″	h. ′ ″	h. ′ ″	h. ′ ″	h ′ ″	″	″	″
Aug. 11	8 29 24,7	1 23 32,5	10 56 28,6	2,3	10 56 26,3	05 00,1	10 51 26,2	1 08 33,8	1 45 18,8	1 05 54,8			
12	8 29 59,2	1 22 40,2	10 56 19,7	2,3	10 56 17,4	04 50,9	10 51 26,5	1 08 33,5	1 45 30,5	1 05 40,5	+0,3	− 11,7	+ 14,3
13	8 32 10,5	1 20 11,3	10 56 10,9	2,3	10 56 08,6	04 41,1	10 51 27,5	1 08 32,5	1 45 42,5	1 05 27,5	1,0	12,0	13,0
14	8 31 45,7	1 20 13,5	10 55 59,6	2,2	10 55 57,4	04 30,9	10 51 26,5	1 08 33,5	1 45 53,5	1 05 14,5	−1,0	11,0	13,0
15	8 28 22,3	1 23 16,5	10 55 49,4	2,2	10 55 47,2	04 20,1	10 51 27,1	1 08 32,9	1 46 05,4	—	+0,6	11,9	
16	8 27 49,6	1 23 26,5	10 55 38	2,2	10 55 35,8	04 08,7	10 51 27,1	1 08 32,9	1 46 16,4	—	—	11,0	
18	8 27 49,3	1 22 39,5	10 55 14	2,2	10 55 12,2	03 44,5	10 51 27,7	1 08 32,3	1 46 39,3	—	0,3	11,5	
19	8 27 49,3	1 22 39,2	10 55 14,3	2,1	10 54 59,9	03 31,6	10 51 28,3	1 08 31,7	1 46 46,7	—	0,6	07,4	
20	8 34 07,4	1 15 30,4	10 54 48,9	2,0	10 54 46,9	03 18,2	10 51 28,7	1 08 31,3	1 46 54,8	—	0,4	08,1	
22	8 28 44,6	1 19 54,3	10 54 19,4	2,0	10 54 17,5	02 50	10 51 27,5	1 08 32,5	1 47 16,5	—	−0,6	10,9	
23	8 22 56,9	1 25 12,3	10 54 04,6	1,9	10 54 02,7	02 35,1	10 51 27,6	1 08 32,4	1 47 21,9	—	+0,1	05,4	
24	8 23 28,6	1 24 12,2	10 53 50,4	1,8	10 53 48,6	02 19,8	10 51 31,2	1 08 31,2	1 47 28,2	—	1,2	06,3	
25	8 33 19,4	1 13 47,6	10 53 33,5	1,6	10 53 31,9	02 04,1	10 51 27,8	1 08 32,2	1 47 40,2	—	−1,0	12,0	
Sept. 1	8 28 24,8	1 14 43,7	10 51 34,3	1,4	10 51 32,9	00 02,6	10 51 29,7	1 08 29,7	1 49 05,7	—	+0,4	12,2	
2	8 17 41,6	1 24 50,6	10 51 16,1	1,2	10 51 14,9	+ 00 16,1	10 51 31	1 08 29	1 49 14	—	0,7	08,3	
3	8 18 14,3	1 23 43	10 50 58,7	1,2	10 50 57,5	00 35,1	10 51 32,6	1 08 27,4	1 49 26,4	—	1,6	12,4	

1822	Times by Chronometer 397.			Equation to equal Altitudes.	Apparent Noon by Chronometer 397	Equation of Time.	Mean Noon by Chronometer 397.	Chronometers Slow or Fast by Mean Time:			Rate per Day.		
Month.	Forenoon.	Afternoon.	Mean.					397 Slow.	391 Slow.	Earnshaw Slow.	397.	391.	Earnshaw.
	h. ′ ″	h. ′ ″	h. ′ ″	″	h. ′ ″	′ ″	h. ′ ″	h. ′ ″	h. ′ ″		″	″	″
Sept. 4	8 17 45,5	1 23 34,9	10 50 40,2	1,3	10 50 38,9	+ 0 54,5	10 51 33,4	1 08 26,6	1 49 34,6	—	+ 0,8	— 08,2	—
6	8 20 14,9	1 19 54,3	10 50 04,6	1,0	10 50 03,6	1 33,8	10 51 37,4	1 08 22,6	1 50 00,6	—	2,0	13	—
8	8 17 56,2	1 20 55,3	10 49 25,4	0,8	10 49 25,0	2 13,8	10 51 38,8	1 08 21,2	1 50 26,2	—	0,7	12,8	—
12	8 14 12,8	1 21 59,9	10 48 06,4	0,4	10 48 06,0	3 35,8	10 51 41,8	1 08 18,2	1 51 23,2	—	0,8	07,7	—

For the LONGITUDE *of* TAPPANOOLY,

1822. *Chronometer* 391, *at Bencoolen.*

	h.	′	″
July 17, Mean Noon at Bencoolen Chronometer Slow.....	1	51	31,4

Chronometer 397.

July 17, Mean Noon at Bencoolen Chronometer Slow.....	1	24	15,4

Chronometer Earnshaw.

July 17, Mean Noon at Bencoolen Chronometer Slow.....	1	24	04,4

Rate of the CHRONOMETERS *at* BENCOOLEN.

1822 Month	Rate of the Chronometers. 391	397	Earnshaw.	Remarks.
	″	″	″	
July 1	— 15,6	+ 03,4	+ 09,9	
2	17,3	02,7	09,2	
3	10,8	03,2	11,2	
4	18,1	02,9	07,9	
5	19,3	02,7	06,7	
6	21,6	04,4	08,4	
7	11,2	01,8	06,3	
8	09,8	02,2	07,7	
9	19,9	05,2	10,2	
10	14,3	01,7	05,7	
11	09,1	01,9	04,9	
12	16,1	04,4	11,2	
13	16,0	04,5	12	
14	17,2	03,8	09,3	
15	15,8	03,2	12,2	
16	10,7	02,3	07,3	
17	15,2	03,14	08,8	Mean.

Chronometer 391.

	h.	′	″
August 11, Mean Noon at Tappanooly Chronometer Slow.....	1	45	18,8
12, ,, at ,, ,, ,,.....	1	45	30,5
13, ,, at ,, ,, ,,.....	1	45	42,5

Chronometer 397.

August 11, Mean Noon at Tappanooly Chronometer Slow.....	1	08	33,8
12, ,, at ,, ,, ,,.....	1	08	33,5
13, ,, at ,, ,, ,,.....	1	08	32,5

Chronometer Earnshaw.

			h.	′	″
August 11	Mean Noon at Tappanooly	Chronometer *Slow*	1	05	54,8
12	,, at ,,	,, ,,	1	05	40,5
13	,, at ,,	,, ,,	1	05	27,5

Rate of the Chronometers at Tappanooly.

1822 Month.	Rates of the Chronometers. 391	397	Earnshaw.	Remarks.
	′	′	″	
August 11				
12	— 11,7	+ 00,3	+ 14,3	
13	12,0	01,0	13,0	
14	11	— 01,0	13,0	
15	11,9	+ 00,6		2 Days.
16	11			
18	22,9	00,6		
	— 11,5	+ 00,25	+ 13,4	Mean at Tappanooly.
	15,2	03,14	08,8	Mean at Bencoolen.
	13,35	01,7	11,1	Mean Rate.

Difference of Longitude between Bencoolen and Tappanooly Island.

Chronometer 391.

		h.	′	″
1822. July 17	Chronometer Slow for Mean Time at Bencoolen	1	51	31,4
Aug. 11	Chronometer Slow for Mean Time at Tappanooly	1	45	18 8
	Difference	0	06	12,6
Mean Rate of Chronometer of Bencoolen and Tappanooly in an interval of 25 days		0	05	35,75
Difference of Longitude in Time between Bencoolen and Tappanooly		0	11	48,35

July 17,	Chronometer Slow for Mean Time at Bencoolen	1	51	31,4
Aug. 12,	Chronometer Slow for Mean Time at Tappanooly	1	45	30,5
	Difference	0	06	00,9
Mean Rate of Chronometer of Bencoolen and Tappanooly in an interval of 26 days		0	05	49,10
Difference of Longitude in Time between Bencoolen and Tappanooly		0	11	50,0

July 17,	Chronometer Slow for Mean Time at Bencoolen	1	51	31,4
Aug. 13,	Chronometer Slow for Mean Time at Tappanooly	1	45	42,5
	Difference	0	05	48,9
Mean Rate of Chronometer of Bencoolen and Tappanooly in an interval of 27 days		0	06	02,46
Difference of Longitude in Time between Bencoolen and Tappanooly		0	11	51,36

Chronometer 397.

	h.	'	"
July 17, Chronometer Slow for Mean Time at Bencoolen	1	24	15,4
August 11, Chronometer Slow for Mean Time at Tappanooly	1	08	33,8
Difference	0	15	41,6
Mean Rate of Chronometer of Bencoolen and Tappanooly in an interval of 25 days		00	42,5
Difference of Longitude in Time between Bencoolen and Tappanooly	0	14	59,1

July 17, Chronometer Slow for Mean Time at Bencoolen	1	24	15,4
August 12, Chronometer Slow for Mean Time at Tappanooly	1	08	33,5
Difference	0	15	41,9
Mean Rate of Chronometer of Bencoolen and Tappanooly in an interval of 26 days		0	44,2
Difference of Longitude in Time between Bencoolen and Tappanooly	0	14	57,7

July 17, Chronometer Slow for Mean Time at Bencoolen	1	24	15,4
August 13, Chronometer Slow for Mean Time at Tappanooly	1	08	32,5
Difference	0	15	42,9
Mean Rate of Chronometer of Bencoolen and Tappanooly in an interval of 27 days		00	45,9
Difference of Longitude in Time between Bencoolen and Tappanooly	0	14	57,0

Chronometer Earnshaw:

July 17, Chronometer Slow for Mean Time at Bencoolen	1	24	04,4
August 11, Chronometer Slow for Mean Time at Tappanooly	1	05	54,8
Difference	0	18	09,6
Mean Rate of Chronometer of Bencoolen and Tappanooly in an interval of 25 days		04	37,5
Difference of Longitude in Time between Bencoolen and Tappanooly	0	13	32,1

July 17, Chronometer Slow for Mean Time at Bencoolen	1	24	04,4
August 11, Chronometer Slow for Mean Time at Tappanooly	1	05	40,5
Difference	0	18	23,9
Mean Rate of Chronometer of Bencoolen and Tappanooly in an interval of 26 days		04	48,6
Difference of Longitude in Time between Bencoolen and Tappanooly	0	13	35,3

July 17, Chronometer Slow for Mean Time at Bencoolen	1	24	04,4
August 13, Chronometer Slow for Mean Time at Tappanooly	1	05	27,5
Difference	0	18	36,9
Mean Rate of Chronometer of Bencoolen and Tappanooly in an interval of 27 days	0	04	59,7
Difference of Longitude in Time between Bencoolen and Tappanooly	0	13	37,2

Difference of Longitude between Bencoolen and Tappanooly.

Chronometer 391.

		h.	'	"	h.	'	"
By 1st Set of Observations		0	11	48,35			
2d	,,	0	11	50,00			
3d	,,	0	11	51,36			
				Mean..	0	11	49,90

Chronometer 397.

By 1st Set of Observations		0	14	59,1			
2d	,,	0	14	57,7			
3d	,,	0	14	57,0			
				Mean..	0	14	57,33

Chronometer Earnshaw.

By 1st Set of Observations		0	13	32,1			
2d	,,	0	13	35,3			
3d	,,	0	13	37,2			
				Mean..	0	13	37,87

RESULTS of the OBSERVATIONS

At Tappanooly Island.

For the True Bearing of Sugar Loaf Peak, and the Variation of the Compass.

Month.	Apparent Time.	Horary Angle.	Dist. of the Sun's So. Limb & Sugar Loaf Peak, corrected for Error of Inst. and S. Diam.	Azimuth.	Horizontal Arc.	True Bearing.	Magnetic Bearing.	Variation of the Compass.
	h. ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "	° ' "
Aug.31	5 49 32	87 23 0	77 0 59	81 22 07	76 59 49	21 38 04	20 20 15	1 17 49
	5 52 20	88 05 0	77 01 59	81 20 45	77 01 15	21 38 0	20 20 15	1 17 45
Sept. 1	5 44 05	86 01 15	76 36 34	81 46 15	76 34 10	21 39 35	20 20 15	1 19 20
5	5 50 13	87 33 15	76 17 22	82 04 07	76 16 20	21 39 33	20 20 15	1 19 18
					Mean....	21 38 48sw		1 18 33 E

At SUGAR LOAF PEAK.

For the Time, and Longitude.

1822 Month.	Time by Chronometer 397 Forenoon.	Altitude of the Sun corrected for Error, Refraction, &c.	Sun's Declination.	Latitude.	Apparent Time.	Equation of Time.	Mean Time.	Chronometer Slow or Fast for Mean Time. 397 Slow.	391 Slow.
	h. ' "	° ' "	° ' "	° ' "	h. ' '	' — "	h. ' "	h. ' "	h. ' "
Sept. 5	7 57 20,5	46 28 50	7 05 44 N	1 34 54 N	9 06 43,2	1 11,6	9 05 31,6	1 08 11,1	1 49 33,1

Difference of Longitude between Tappanooly and Sugar Loaf Peak.

Chronometer 397.

	h.	′	″
Sept. 5, Chronometer Slow for Mean Time at Sugar loaf Peak	1	08	11,1
5, Chronometer Slow for Mean Time at Tappanooly	1	08	24,6
Difference of Longitude in time between Tappanooly and Sugar loaf Peak	0	00	13,5

Chronometer 391.

Sept. 5, Chronometer Slow for Mean Time at Sugar loaf Peak	1	49	33,1
5, Chronometer Slow for Mean Time at Tappanooly	1	49	47,6
Difference of Longitude in Time between Tappanooly and Sugar loaf Peak	0	00	14,5

Difference of Longitude in Time by Chronometer 397	0	00	13,5
Difference of Longitude in Time by Chronometer 391	0	00	14,5
Mean..	0	00	14,0
Difference of Longitude in Degrees between Tappanooly and Sugar loaf Peak	0	03	30,0

The Latitude and Longitude of Sugar Loaf Peak.

Station at	Names.	Bearings referred to the Meridian.	Distance.	Distances on the Meridian.	Distances on the Perpendicular.	Latitude.	Longitude from Tappanooly	Longitude from Greenwich
		° ′ ″	*feet.*	*feet.*	*feet.*	° ′ ″	° ′ ″	° ′ ″
Tappanooly	Sugar-loaf Peak	21 38 48 s w	57742	53670 s	21300 w	1 34 54 N	0 03 30,w	98 37 47 E

Latitude of Pulo Panjong. (L.)

1822 Month.	Stars Observed.	Meridian Altitude.	Corrected Refraction.	Mean Declination.	Nutation.	Abberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude North.
		° ′ ″	′ ″		−	+	° ′ ″	° ″ ″	° ′ ″	° ′ ″
Sep. 17	α Lyræ	51 34 35,5	0 41,5	*			51 33 54 N	38 26 06 s	38 37 39,8 N	0 11 33,8
	β Cygni	62 36 05,5	0 27,5	27 35 25,8 N	4 4	15,6	62 35 38	27 24 22	27 35 37	0 11 15
	α Pavonis	32 32 03	1 23,5	57 17 28,3 s	+ 2,8	+ 7,8	32 30 39,5 s	57 29 20,5 N	57 17 58,9 s	0 11 26,5
	α Cygni	45 33 18	0 52,2	*			45 32 25,8 N	44 27 34,2 s	44 39 18,3 N	0 11 44,1
	α Gruis	42 00 20,5	0 58,9	47 48 47,3 s	− 1,0	+ 0,2	41 59 21,6 s	48 00 38,4 N	47 48 46,5 s	0 11 51,9
18	α Pavonis	32 31 58	1 23,5	57 19 48,3 s	2,8	8,0	32 30 34,5 s	57 29 25,5 N	57 17 59,1 s	0 11 26,4
	Fomalhaut	59 15 25,5	0 31,2	*			59 14 54,3	30 45 05,7	30 33 26,3	0 11 39,4
21	β Pegasi	63 04 53	0 27,5	27 07 05,1 N	+ 3,1	+ 9,1	63 04 25,5 N	26 55 34,5 s	27 07 17,3 N	0 11 42,8
	β Cygni	62 36 10,5	0 27,5	27 35 26,0	− 4,4	+ 15,8	62 35 43	27 14 17	27 35 37,4	0 11 20,4
	γ Cygni	50 30 15,5	0 44	39 41 59,9	− 2,6	− 13,6	50 29 31,5	39 30 28,5	39 41 43,7	0 11 15,2

1822 Month.	Stars Observed.	Meridian Altitude.	Corrected Refraction.	Mean Declination.	Nutation.	Aberration.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude North.
		° ′ ″	′ ″	° ′ ″	″	″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
Sep. 21	α Cygni.....	45 33 18	0 52,2	*	+	+	45 32 25,8	44 27 34,2	44 39 18,3	0 11 44,1
	ε Cygni.....	56 53 45,5	0 34,4	33 18 08,1	− 1,8	+ 13,7	56 53 11,1	33 06 48,9	33 18 20	0 11 31,1
	α Gruis.....	42 00 23	0 58,9	47 48 47,2 s	1,1	1,1	41 59 24,1 s	48 00 35,9 s	47 48 47,2 s	0 11 48,7
	β Gruis.....	42 00 58	0 59,0	47 48 43,2	− 2,8	− 1,5	41 59 59	48 00 01	47 48 39,4 s	0 11 21,6
	Fomalhaut..	59 15 35,5	0 31,2	*			59 15 04,3	30 44 55,7	30 33 26,7	0 11 31

The Asterisks in the Column of "Mean Declination" are placed to shew that the Declination were taken from the Nautical Almanac; being there corrected for Nutation and Aberration.

Latitude of Pulo Panjong. (R.)

By the Stars.

1822 Month.	Stars Observed.	Meridian Altitude.	Corrected Refraction.	Mean Declination.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude. North.
		° ′ ″	″	° ′ ″	° ′ ″	° ′ ″ °	° ′ ″	° ′ ″
Sept. 3	α Lyra.....	51 34 22,5	42,4	*	51 33 40,1	38 26 19,9 s	38 37 44,2 N	00 11 24,3
5	α Lyra.....	51 35 11,2	42,4	*	51 34 28,8	38 25 31,2	38 37 44,4	00 12 13,2
	Fomalhaut.....	59 16 58,7	31,4	*	59 16 27,3	30 43 32,7 N	30 33 3,7 s	00 10 29
11	α Lyra.....	51 34 48,7	41,8	*	51 34 6,9	38 25 53,1 s	38 37 45,1 N	00 11 52
13	α Lyra.....	51 34 48,7	42,3	*	51 34 6,4	38 25 53,6	38 37 45,2	00 11 51,6
	α Pavonis.....	32 32 3,9	83,75	57 17 33,8 s	32 30 40,2	57 29 19,8 N	57 17 43,3 s	00 11 36,5
	Fomalhaut...	59 16 26,4	31,4	*	59 15 55	30 44 5	30 33 4,6	00 11 00,4
17	α Pavonis.....	32 32 37,5	84,1	57 17 33,7 s	32 31 13,4	57 28 46,6	57 17 44,1	00 11 2,5
	α Cygni.....	45 33 37,5	52,3	*	45 32 45,2	44 27 14,8 s	44 39 33,9 N	00 12 19,1

Results of the Observations

For the Latitude of Pulo Panjong. (L.)

By the Northern Stars.		*By the Southern Stars.*	
	° ′ ″		° ′ ″
α Lyræ	0 11 33,8 N	α Pavonis	0 11 21,6 N
β Cygni	0 11 15		0 11 26,4
	0 11 20,4	α Gruis ..	0 11 51,9
γ Cygni	0 11 15,2		0 11 48,7
α Cygni	0 11 44,1	β Gruis	0 11 21,6
	0 11 34,5	Fomalhaut	0 11 39,4
ε Cygni	0 11 31,1		0 11 31
β Pegasi	0 11 42,8		
Mean	0 11 29,61	Mean	0 11 13,44

Latitude of Pulo Panjong by the Northern Stars....	0 11 29,61 N
do do by the Southern Stars....	0 11 13,44
Mean....	0 11 21,5

Results. (R.)

By Northern Stars.		*By Southern Stars.*	
	° ′ ″		° ′ ″
α Lyra	00 11 24,3 N	Fomalhaut	00 10 29 N
α Lyra	00 12 13,2	α Pavonis	00 11 36,5
α Lyra	00 11 52	Fomalhaut	00 11 00,4
α Lyra	00 11 51,6	α Pavonis	00 11 2,5
α Cygni	00 12 19,1		
Mean	00 11 35 N	Mean	00 11 2,1 N

Latitude.

	° ′ ″
By Northern Stars ..	00 11 35 N
Southern Stars ..	00 11 2,1 *
Mean	00 11 18,5 N

* The Result by these Observations owing to a mistake in the Declination differed originally so much from that by the other Assistant, that I had rejected it in the deductions—before however this part of the Report was printed, the mistake was discovered by the Assistant Robinson, who took the Observations, and the Result now differs very little from that by the Observations of the other Assistant—the deductions however were made by using the Observations of the latter.

RESULTS OF THE OBSERVATIONS

AT PULO PANJONG,

For the TIME, LONGITUDE *and* RATES *of the* CHRONOMETERS. *(L.)*

1822	TIMES BY CHRONOMETER 397.			Equation to equal Altitudes	Apparent Noon by Chronometer 397.	Equation of Time.	Mean Noon by Chronometer 397.	CHRONOMETERS SLOW OR FAST BY MEAN TIME.			Rate per day.		
Month.	Forenoon.	Afternoon.	Mean.					397 Slow.	391 Slow.	Earnshaw Slow.	397	391	Earnshaw.
	h. ′ ″	h. ′ ″	h. ′ ″	″	h. ′ ″	′ ″	h. ′ ″	h. ′ ″	h. ′ ″	h. ′ ″	″		
				−		+							
Sept. 17	8 11 58,3	1 16 27,1	10 44 12,7	0,4	10 44 12,3	5 20,2	10 49 32,4	1 10 27,6	1 54 44,6	—			
18	8 09 32,4	1 08 10,1	10 43 51,2	0,4	10 43 50,8	5 41,2	10 49 32,0	1 10 28	1 54 51	—	−00,4	−06,4	
22	8 07 43,8	1 17 14,4	10 42 29,1	0,2	10 42 28,9	7 05	10 49 33,9	1 10 26,1	1 55 19	0 59 42	+00,5	07,0	
25	8 15 17,1	1 07 12,6	10 41 14,8	+ 0,3	10 41 15,1	8 28	10 49 43,1	1 10 16,9	1 55 52,9	0 58 18,6	02,3	08,5	+ 20,9
28	8 10 44,3	1 10 25,8	10 40 35,1	0,5	10 40 35,6	9 07,9	10 49 43,5	1 10 16,5	1 56 10,5	0 57 45,5	00,2	08,8	16,6
Oct. 19	8 07 51,3	1 02 45,2	10 35 18,3	2,0	10 35 20,3	14 48,8	10 50 09,1	1 09 51,9	2 00 39,9	0 52 16,9	01,1	12,8	15,6
20	8 06 08,3	1 04 13,9	10 35 11,1	2,0	10 35 13,1	14 58,5	10 50 11,6	1 09 48,4	2 00 52,4	0 51 59,4	03,5	12,5	17,5
	Chronometer 391.				*Chronometer* 391		*Chronometer* 391				03,2	09,3	14,4
30	7 16 01,4	12 06 45,1	9 41 23,2	2,6	9 41 25,9	16 08,5	9 57 34,4	1 09 16,6	2 02 25,6	0 49 35,6			
31	7 16 18,6	12 05 47,2	9 41 02,9	2,7	9 41 05,6	16 11,5	9 57 17,1	1 09 15,9	2 02 42,9	0 49 23,9	00,7	17,3	11,7
Nov. 12	7 29 18,3	11 48 41,8	9 39 00,1	2,9	9 39 03,0	15 43,1	9 54 46,1	1 09 08,9	2 05 13,9	0 47 10,4			
13	7 22 51,8	11 55 03,4	9 38 57,6	2,9	9 39 00,5	15 35,2	9 54 35,7	1 09 07,3	2 05 24,3	0 46 53,3	00,6	10,4	17,1
14	7 23 17,9	11 54 26,4	9 38 52,2	2,9	9 38 55,1	15 26,4	9 54 21,7	1 09 07,5	2 05 38,5	0 46 44,5	02,4	14,2	08,8
	Chronometer 397.				*Chronometer* 397		*Chronometer* 397				00,3	10,7	12,8
16	8 21 09,7	12 50 18,4	10 35 44,0	2,8	10 35 46,8	15 06,3	10 50 53,1	1 09 06,9	2 05 59,9	0 46 18,9			
17	8 21 54,8	12 49 59,2	10 35 57,0	2,6	10 35 59,6	14 55	10 50 54,6	1 09 05,4	2 06 08,9	0 46 08,9	01,5	09,0	10,0

For the Longitude of Pulo Panjong:

Chronometer 391, *at Tappanooly.*

	h.	′	″
September 12, Mean Noon at Tappanooly Chronometer Slow.....	1	51	23,2

Chronometer 397.

September 12, Mean Noon at Tappanooly Chronometer Slow.....	1	08	18,2

Rate of the Chronometers at Tappanooly.

1822 Month		Rate of the Chronometers. 391	397	Remarks.
		″	″	
August	18	— 07,4	+ 00,6	
	19	08,1	00,4	
	20	21,7	— 01,2	2 Days.
	22	05,4	+ 00,1	
	23	06,3	01,2	
	24	12	— 01	
	25	85,5	+ 02,5	7 Days.
September	1	08,3	00,7	
	2	12,4	01,6	
	3	08,2	00,8	
	4	13,0	04,0	2 Days.
	6	12,8	01,4	2 Days.
	8	57	03,0	4 Days.
	12	— 10,32	+ 00,74	Mean.

Chronometer 391.

	h.	′	″
September 17, Mean Noon at Pulo Panjong Chronometer Slow.....	1	54	44,6
18, ,, at ,, ,, ,,.....	1	54	51
22, ,, at ,, ,, ,,.....	1	55	19

Chronometer 397.

September 17, Mean Noon at Pulo Panjong Chronometer Slow.....	1	10	27,6
18, ,, at ,, ,, ,,.....	1	10	28
22, ,, at ,, ,, ,,.....	1	10	26,1

Rate of the Chronometers at Pulo Panjong.

1822 Month.	Rates of the Chronometers. 391	397	Earnshaw.	Remarks.
	″	″	″	
September 17				
18	— 06,4	— 00,4		
22	28	+ 01,9		4 Days.
26	33,9	09,2	+ 83,6	4 Days.
28	17,6	00,4	33,1	2 Days.
	— 07,81	+ 01,11	+ 19,45	Mean at Pulo Panjong.
	10,32	00,74		Mean at Tappanooly.
	09,07	00,93		Mean Rate.

Difference of Longitude between Tappanooly and Pulo Panjong.

Chronometer 391.

	h.	′	″
1822. Sept. 12, Chronometer Slow for Mean Time at Tappanooly	1	51	23,2
Sept. 17, Chronometer Slow for Mean Time at Pulo Panjong	1	54	44,6
Difference	0	03	21,4
Mean Rate of Chronometer of Tappanooly and Pulo Panjong in an interval of 5 days		00	45,35
Difference of Longitude in Time between Tappanooly and Pulo Panjong	0	02	36,05

	h.	′	″
September 12, Chronometer Slow for Mean Time at Tappanooly	1	51	23,2
September 18, Chronometer Slow for Mean Time at Pulo Panjong	1	54	51
Difference	0	03	27,8
Mean Rate of Chronometer of Tappanooly and Pulo Panjong in an interval of 6 days		00	54,42
Difference of Longitude in Time between Tappanooly and Pulo Panjong	0	02	33,38

	h.	′	″
September 12, Chronometer Slow for Mean Time at Tappanooly	1	51	23,2
September 22, Chronometer Slow for Mean Time at Pulo Panjong	1	55	19
Difference	0	03	55,8
Mean Rate of Chronometer of Tappanooly and Pulo Panjong in an interval of 10 days	0	01	30,70
Difference of Longitude in Time between Tappanooly and Pulo Panjong	0	02	25,10

Chronometer 397.

	h.	′	″
September 12, Chronometer Slow for Mean Time at Tappanooly	1	08	18,2
September 17, Chronometer Slow for Mean Time at Pulo Panjong	1	10	27,6
Difference	0	02	09,4
Mean Rate of Chronometer of Tappanooly and Pulo Panjong in an interval of 5 days			04,65
Difference of Longitude in Time between Tappanooly and Pulo Panjong	0	02	14,05

	h.	′	″
September 12, Chronometer Slow for Mean Time at Tappanooly	1	08	18,2
September 18, Chronometer Slow for Mean Time at Pulo Panjong	1	10	28
Difference	0	02	09,8
Mean Rate of Chronometer of Tappanooly and Pulo Panjong in an interval of 6 days			05,58
Difference of Longitude in Time between Tappanooly and Pulo Panjong	0	02	15,38

	h.	'	"
September 12, Chronometer Slow for Mean Time at Tappanooly.....	1	08	18,2
September 22, Chronometer Slow for Mean Time at Pulo Panjong.....	1	10	26,1
Difference....	0	02	07,9
Mean Rate of Chronometer of Tappanooly and Pulo Panjong in an interval of 10 days..		00	09,3
Difference of Longitude in Time between Tappanooly and Pulo Panjong.....	0	02	17,2

DIFFERENCE of LONGITUDE between TAPPANOOLY and PULO PANJONG.

Chronometer 391.

	h.	'	"	h.	'	"
By 1st Set of Observations.....	0	02	36,05			
2d "	0	02	33,38			
3d "	0	02	25,10			
Mean..				0	02	31,51

Chronometer 397.

By 1st Set of Observations.....	0	02	14,05			
2d "	0	02	15,38			
3d "	0	02	17,2			
Mean..				0	02	15,54
Mean..				0	02	23,53 East.

OBSERVATIONS

FOR THE TIME AND LONGITUDE OF PULO PANJONG. (R.)

1822 Month.	Mean of Times per Chronometer 397.	Altitudes Corrected for Error of Sextant.	Refraction.	Parallax.	True Altitude of the Sun's Centre.	Sun's Declination.	Apparent Time.	Equation of Time.	Mean Time.	Chronometers Fast or Slow for Mean Time: 397 Slow.	391 Slow.	Earnshaw Slow.	Rate per Day. 397.	391.	Earnshaw
	h. ' "	h. ' "	"	+ "	° ' "	° ' "	h. ' "	' "	h. ' "	h. ' "	h. ' "	h. ' "	"	"	"
Nov. 1	19 42 26,53	44 59 23,75	57	6,5	44 58 33,25	14 32 39,6 s	21 7 54,82	—16 15,01	20 51 39,81	1 9 13,23	2 3 6	0 48 58,5			
3	By the Equal Altitudes of the Sun								10 50 47,29	1 9 12,71	2 3 15,71	0 48 46,96	+0,29	—9,71	+ 11,54
6	By "	"	"						10 50 49,52	1 9 10,48	2 3 46,48	0 48 15,73	0,78	10,26	9,74
12	By "	"	"						10 50 51,61	1 9 8,38	2 5 13,38	0 47 9,88	0,35	11,48	10,97
13	By "	"	"						10 50 51,81	1 9 8,19	2 5 25,19	0 46 54,19	0,19	11,81	14,69

RATE of the CHRONOMETERS at PULO PANJONG.

1822 Day of the Month.	Rate of Chronometers. 391.	397.	Earnshaw.	Remarks.
	"	"	"	
November 2 to 3	— 9,71	+ 0,29	+ 11,54	
6	10,26	0,79	9,74	
12	14,48	0,35	10,97	
13	11,81	0,19	14,69	
	46,26	1,61	46,94	
Mean....	11,56	0,4	11,73	At Pulo Panjong.

At PULO TELLOOR.

For the Time, and Longitude.

1822 Month.	Time by Chronometer 397 Forenoon.	Altitude of the Sun corrected for Error, Refraction, &c.	Sun's Declination.	Latitude.	Apparent Time.	Equation of Time.	Mean Time.	Chronometer Slow or Fast by Mean Time.	
								397 Slow.	391 Slow.
	h. ′ ″	° ′ ″	° ′ ″	° ′ ″	h. ′ ′	′ — ″	h. ′ ″	h. ′ ″	h. ′ ″
Sep. 19	7 41 59,3	44 38 46,8	1 46 03 S	0 07 20 N	8 58 40,3	5 59,5	8 52 40,8	1 10 41,5	1 55 09,5

Difference of Longitude between Pulo Panjong and Pulo Telloor.

Chronometer 397.

	h.	′	″
Sept. 19, Chronometer Slow for Mean Time at Pulo Telloor	1	10	41,5
19, Chronometer Slow for Mean Time at Pulo Panjong	1	10	27,5
Difference of Longitude in time between Pulo Panjong and Pulo Telloor	0	00	14,0

Chronometer 391.

Sept. 19, Chronometer Slow for Mean Tim at Pulo Telloor	1	55	09,5
19, Chronometer Slow for Mean Time at Pulo Panjong	1	54	57,4
Difference of Longitude in Time between Pulo Panjong and Pulo Telloor	0	00	12,1

Difference of Longitude in Time by Chronometer 397	0	00	14,0
Difference of Longitude in Time by Chronometer 391	0	00	12,1
Mean..	0	00	13,05
Difference of Longitude in Degrees between Pulo Panjong and Pulo Telloor	0	03′	15,1

At PULO PAHGAUGO.

For the Time, and Longitude.

1822 Month.	Time by Chronometer 397 Forenoon.	Altitude of the Sun corrected for Error, Refraction, &c.	Sun's Declination.	Latitude.	Apparent Time.	Equation of Time.	Mean Time.	Chronometers Slow or Fast by Mean Time.	
								397.	391.
	h. ′ ″	° ′ ″	° ′ ″	° ′ ″	h. ′ ″	′ ″	h. ′ ″	h. ′ ″	h. ′ ″
Sep. 23	8 32 13,7	57 29 05,8	0 11 48 N	0 10 43 N	9 49 56,1	7 23,8	9 42 32,3	1 10 17,4	1 55 15,1

Difference of Longitude between Pulo Panjong and Pulo Pahgaugo.

Chronometer 397.

	h.	′	″
Sept. 23, Chronometer Slow for Mean Time at Pulo Pahgaugo	1	10	17,4
23, Chronometer Slow for Mean Time at Pulo Panjong	1	10	24,8
Difference of Longitude in Time between Pulo Panjong and Pulo Pahgaugo	0	00	07,4

Chronometer 391.

Sept. 23, Chronometer Slow for Mean Time at Pulo Pahgaugo	1	55	15,1
23, Chronometer Slow for Mean Time at Pulo Panjong	1	55	24,3
Difference of Longitude in Time between Pulo Panjong and Pulo Pahgaugo	0	00	09,2

	h.	'	"
Difference of Longitude in Time by Chronometer 397	0	00	07,4
Difference of Longitude in Time by Chronometer 391	0	00	09,2
Mean..	0	00	08,3
Difference of Longitude in degrees between Pulo Panjong and Pulo Pahgaugo	0	02	04,5

Pulo Panjong from Pulo Tellor, 31284 *feet.*

Triangles.	Angles.			Distances from the intersected objects in	Feet.	Miles.
	°	'	"			
Pulo Panjong	105	52	30	Pulo Pahgaugo	16262	3,08
Pulo Telloor	23	38	30		39006	7,388
Pulo Pahgaugo	50	29	09			
Pulo Parjong	53	16	30	Ayer Bonghy Hill	23718	4,492
Pulo Telloor	48	01	35		25688	4,865
Ayer Bonghy Hill	78	41	55			
Pulo Panjong	82	22	0	Lubwaun Hill	23356	4,423
Pulo Telloor	39	24	0		36470	6,907
Lubwaun Hill	58	14	0			
Pulo Panjong	75	44	0	Goonum Allyee	30257	5,731
Pulo Telloor	50	54	15		37784	7,156
Goonum Allyee	53	21	45			
Pulo Panjong	44	02	30	Mount Ophir	264974	50,184
Pulo Telloor	130	50	0		243460	46,110
Mount Ophir	5	07	30			
Pulo Panjong	93	21	0	High Peak on the Range	170022	32,2
Pulo Telloor	76	21	0		174785	33,103
High Peak on the Range	10	18	0			

Pulo Panjong from Lubwaun Hill, 23356.

Pulo Panjong	25	03	0	Ayer Bonghy	23888	4,524
Lubwaun Hill	80	22	40		10258	1,943
Ayer Bonghy	74	34	20			

The Latitude and Longitude of Places on the West Coast of Sumatra about Ayer Bonghy and the adjacent Islands, deduced from the Station at Pulo Panjong in Latitude 0° 11' 22" N. and Longitude 99° 17' 10" E.

Station at	Names of Places.	Bearings referred to the Meridian.	Distances direct.	Distances on the Meridian.	Distances on the Perpendicular.	Latitude.	Longitude from Pulo Panjong.	Longitude from Greenwich
		° ' "	*feet.*	*feet.*	*feet.*	° ' "	° ' "	° ' "
Pulo Panjong	Pulo Telloor.....	37 34 55 S E	31284	24792 S	19080 E	0 07 16 N	0 03 15 E	99 20 25 E
	Pulo Pahgaugo.....	68 17 35 S W	16262	6014	15109 W	0 10 22	0 02 26 W	99 15 32
	Ayer Bonghy Hill..	89 08 35 N E	23718	355 N	23715 E	0 11 26	0 03 54 E	99 21 04
	Lubwaun Hill.....	60 03 05	23356	11660	20237	0 13 18	0 03 19	99 20 29
	Goonum Allyee.....	66 41 05	30257	11975	27786	0 13 21	0 04 34	99 21 44
	Mount Ophir.....	81 37 05 S E	264974	38600 S	262147	0 04 58	0 43 05	100 00 15
	High Pk. on the Range	49 04 05 N E	170022	111392 N	128450	0 29 48	0 21 06	99 38 16
	Ayer Bonghy.....	85 06 05	23888	2040	23801	0 11 42	0 03 55	99 21 05

Latitude of Nattal Station.

1822 Month.	Stars Observed.	Meridian Altitude.	Refraction.	Mean Declination.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude North.
		° ' "	' "	° ' "	° ' "	° " "	° ' "	° ' "
Oct. 9	α Pavonis.....	32 09 30,1 S	1 30,5	57 17 49,6 S	32 07 59,5 S	57 52 00,5 N	57 17 49,6 S	0 34 10,9
	γ Cygni.....	50 53 10 N	0 46,2	39 41 33,3 N	50 52 23,8 N	39 07 36,2 S	39 41 33,3 N	0 33 57,1
	α Cygni.....	45 53 45	0 55,2	*	45 52 49,8	44 07 10,2	44 39 21,9	0 32 11,7
	γ Gruis.....	51 14 40 S	0 45,5	38 11 38,9 S	51 13 54,5 S	38 46 05,5 N	38 11 38,9 S	0 34 26,6
	α Gruis.....	41 38 42,5	1 03,7	47 48 44,3	41 37 38,8	48 22 21,2	47 48 44,3	0 33 36,9
	β Gruis.....	41 38 45	1 03,7	47 48 29,8	41 37 41,3	48 22 18,7	47 48 29,8	0 33 48,9
	η Pegasi.....	61 15 00 N	0 31,5	29 17 44,4 N	61 14 28,5 N	28 45 31,5 S	29 17 44,4 N	0 32 12,9
	Fomalhaut...	58 54 10 S	0 34,1	* S	58 53 35,9 S	31 06 24,1 N	30 33 29,1 S	0 32 55,0
	β Pegasi.....	63 26 42,5 N	0 28,6	27 07 09,0 N	63 26 13,9 N	26 33 46,1 S	27 07 09,0 N	0 33 22,9
	α Andromeda..	62 27 15	0 29,6	*	62 26 45,4	27 33 14,6	28 06 59,6	0 33 45,0
	α Phœnicis	46 11 35,5 S	0 54,6	43 15 27,9 S	46 10 42,9 S	43 49 17,1 N	43 15 27,9 S	0 33 49,2

The Asterisks in the Column of "Mean Declination" are placed to shew that the Declination were taken from the Nautical Almanac; being there corrected for Nutation and Aberration.

Results of the Observations

For the Latitude of Nattal Station.

By the Northern Stars.	° ' "	*By the Southern Stars.*	° ' "
γ Cygni	0 33 57,1 N	α Pavonis	0 34 10,9 N
α Cygni	0 32 11,7	γ Gruis	0 34 26,6
η Pegasi	0 32 12,9	α Gruis ..	0 33 36,9
β Pegasi	0 33 22,9	β Gruis	0 33 48,9
α Andromeda	0 33 45	Fomalhaut	0 32 55,0
		α Phœnicis ..	0 33 49,2
Mean	0 33 05,9	Mean	0 33 46,9

Latitude of Nattal Station by the Northern Stars....	0 33 05,9 N
do do by the Southern Stars....	0 33 46,9
Mean....	0 33 26,4 N

At NATAL STATION.

For the TIME *and* LONGITUDE. *(L.)*

1822 Month.	TIMES BY CHRONOMETER 397. Forenoon.	Afternoon.	Mean.	Equation to equal Altitudes.	Apparent Noon by Chronometer 397.	Equation of Time.	Mean Noon Chronometer 397.	CHRONOMETERS SLOW OR FAST FOR MEAN TIME. 397 Slow.	391 Slow.	Earnshaw.
	h. ′ ″	*h.* ′ ″	*h.* ′ ″	″	*h.* ′ ″	′ ″	*h.* ′ ″	*h.* ′ ″	*h.* ′ ″	*h.* ′ ″
Oct. 9	8 06 10,3	1 10 01,6	10 38 05,9	+ 1,2	10 38 07,1	+ 12 30,4	10 50 37,5	1 09 22,5	1 57 33,5	0 53 19

OBSERVATIONS

For the TIME *and* LONGITUDE *of* NATAL. (R.)

1822 Month.	Mean Times per Chronometer 397.	Altitudes Corrected for Error of Sextant.	Refraction.	Parallax.	True Altitude of the Sun's Centre.	Sun's Declination.	Apparent Time.	Equation of Time.	Mean Time.	CHRONOMETERS SLOW OR FAST FOR MEAN TIME. 397.	391.	Earnshaw.	RATE PER DAY. 397.	391.	Earnshaw
	h. ′ ″	° ′ ″	″	+ ″	° ′ ″	° ′ ″	*h.* ′ ″	″	*h.* ′ ″	*h.* ′ ″			″	″	″
Dec. 2	By equal Altitudes of the Sun								10 51 47,31	1 8 12,6	—	—			
2	21 48 23,5	63 59 37,5	28	4	63 59 13,5	22 2 45,2 S	23 6 46,64	− 10 9,02	22 56 36,72	1 8 13,22	—	—	+ 0,64	—	—
1823 Mar 27	*Earnshaw.* 2 10 0,65	60 0 0,31	33	4,25	59 59 31,56	2 19 36,1 N	1 59 51,15	+ 5 43,21	2 5 34,36	—	4 16 25,68	0 4 26,29			
28	2 9 58,43	60 0 0,31	33	4	59 59 31,3	2 43 4,7	1 59 45,51	5 24,1	2 5 9,61	—	4 16 54,9	0 4 48,82	—	— 29,22	+ 22,53
,,	21 38 22,8	51 59 45	45	5,75	51 59 5,75	3 2 3,2	21 28 11,47	5 9,36	21 33 20,83	—	4 26 29	0 5 2	—	*Stopt.*	13,18

AT NATAL.

DIFFERENCE of LONGITUDE from PULO PANJONG.

Chronometer 391.

			h.	'	"
1822. Dec.	2,	Mean Noon at Natal Chronometer Slow	2	8	20,6
	3,	„ at „ „	2	8	31,6

Chronometer 397.

December	2,	Mean Noon at Natal Chronometer Slow	1	8	12,6
	3,	„ at „ „	1	8	13,24

Chronometer Earnshaw.

December	2,	Mean Noon at Natal Chronometer Slow	0	42	5,6
	3,	„ at „ „ „	0	41	55,24

RATE of the CHRONOMETERS.

	391	397	Earnshaw.	
		'	'	
	46,26	+ 1,61	46,94	At Pulo Panjong.
	10,64	— 0,64	10,36	At Natal.
5 Days.	56,90	0,97	57,30	
Mean Rate.	11,38	+ 0,19	+11,46	Pulo Panjong and Natal.

DIFFERENCE of LONGITUDE between PULO PANJONG, and NATAL STATION. (L.)

Chronometer 397.

		h.	'	"
Sept. 28,	Chronometer Slow for Mean Time at Pulo Panjong	1	10	16,5
October 9,	Chronometer Slow for Mean Time at Natal	1	09	22,5
	Difference	0	00	54,0
	Mean Rate of Chronometer at Pulo Panjong in an interval of 11 days	0	00	10,2
	Difference of Longitude in Time between Pulo Panjong and Natal	0	01	04,2

Chronometer 391.

		h.	'	"
Sept. 28,	Chronometer Slow for Mean Time at Pulo Panjong	1	56	10,5
Oct. 9,	Chronometer Slow for Mean Time at Natal	1	57	33,5
	Difference	0	01	23,0
	Mean Rate of Chronometer at Pulo Panjong in an interval of 11 days	0	01	39,0
	Difference of Longitude in Time between Pulo Panjong and Natal	0	00	16

Chronometer Earnshaw.

		h.	'	"
Sept. 28,	Chronometer Slow for Mean Time at Pulo Panjong	0	57	45,5
October 9,	Chronometer Slow for Mean Time at Natal	0	53	19,0
	Difference	0	04	26,5
	Mean Rate of Chronometer at Pulo Panjong in an interval of 11 days	0	03	33,95
	Difference of Longitude in Time between Pulo Panjong and Natal		00	52,55

For the LONGITUDE *of* NATAL STATION.

Chronometer 397.

	h.	′	″
October 9, Mean Noon at Natal Chronometer Slow	1	09	22,5

Chronometer 391.

October 9, Mean Noon at Natal Chronometer Slow	1	57	33,5

RATE of the CHRONOMETERS *at* PULO PANJONG. *(2d Time.)*

1822 Month.	RATE OF CHRONOMETERS. 397.	391.	Earnshaw.	Remarks.
	″	″	″	
October 19				
20	+ 03,5	— 12,5	+ 17,5	
30	31,8	93,2	143,8	10 days.
31	00,7	17,3	11,7	
Mean....	03,0	10,25	14,41	

Chronometer 397.

	h.	′	″
October 19, Mean Noon at Pulo Panjong Chronometer Slow	1	09	51,9

Chronometer 391.

October 19, Mean Noon at Pulo Panjong Chronometer Slow	2	0	39,9

DIFFERENCE of LONGITUDE *between* PULO PANJONG *and* NATAL *(2d Time)*

Chronometer 397.

	h.	′	″
October 9, Chronometer Slow for Mean Time at Natal	1	09	22,5
October 19, Chronometer Slow for Mean Time at Pulo Panjong	1	09	51,9
Difference....	0	00	29,4
Mean Rate of Chronometer at Pulo Panjong in an interval of 10 days			30,0
Difference of Longitude in Time between Pulo Panjong and Natal	0	00	59,4

Chronometer 391.

	h.	′	″
October 9, Chronometer Slow for Mean Time at Natal	1	57	33,5
October 19, Chronometer Slow for Mean Time at Pulo Panjong	2	00	39,9
Difference....	0	03	06,4
Mean Rate of Chronometer at Pulo Panjong in an interval of 10 days		01	42,5
Difference of Longitude in Time between Pulo Panjong and Natal	0	01	23,9

Chronometer Earnshaw.

	h.	'	"
October 9, Chronometer Slow for Mean Time at Natal	0	53	19,0
October 19, Chronometer Slow for Mean Time at Pulo Panjong	0	52	16,9
Difference	0	01	02,1
Mean Rate of Chronometer at Pulo Panjong in an interval of 10 days	0	02	24,1
Difference of Longitude in Time between Pulo Panjong and Natal	0	01	22,0

Difference of Longitude from Pulo Panjong. (R.)

Chronometer 391.

1822. December 2, Chronometer Slow for Mean Time at Natal	2	8	20,6
November 13, Chronometer Slow for Mean Time at Pulo Panjong	2	5	25,19
Difference	0	2	55,41
Mean Rate of Chronometer at Pulo Panjong and Natal in an interval of 19 days	0	3	36,22
Difference of Longitude in Time between Pulo Panjong and Natal	0	0	40,81

December 3, Chronometer Slow for Mean Time at Natal	2	8	31,24
November 13, Chronometer Slow for Mean Time at Pulo Panjong	2	5	25,19
Difference	0	3	6,05
Mean Rate of Chronometer at Pulo Panjong and Natal in an interval of 20 days	0	3	46,6
Difference of Longitude in Time between Pulo Panjong and Natal	0	0	40,55

Chronometer 397.

	h.	'	"
December 2, Chronometer Slow for Mean Time at Natal	1	8	12,6
November 13, Chronometer Slow for Mean Time at Pulo Panjong	1	9	8,19
Difference	0	0	55,59
Mean Rate of Chronometer at Pulo Panjong and Natal in an interval of 19 days	0	0	3,61
Difference of Longitude in Time between Pulo Panjong and Natal	0	0	51,98

December 3, Chronometer Slow for Mean Time at Natal	1	8	13,24
November 13, Chronometer Slow for Mean Time at Pulo Panjong	1	9	8,19
Difference	0	0	54,95
Mean Rate of Chronometer at Pulo Panjong and Natal in an interval of 20 days	0	0	3,8
Difference of Longitude in Time between Pulo Panjong and Natal	0	0	51,15

Chronometer Earnshaw.

	h.	'	"
December 2, Chronometer Slow for Mean Time at Natal	0	42	5,6
November 13, Chronometer Slow for Mean Time at Pulo Panjong	0	46	54,19
Difference	0	4	48,59
Mean Rate of Chronometer at Pulo Panjong and Natal in an interval of 19 days	0	3	37,74
Difference of Longitude in Time between Pulo Panjong and Natal	0	1	10,85

December 3, Chronometer Slow for Mean Time at Natal.....	0	41	55,24
November 13, Chronometer Slow for Mean Time at Pulo Panjong.....	0	46	54,19
Difference....	0	4	58,95
Mean Rate of Chronometer at Pulo Panjong and Natal in an interval of 20 days.....	0	3	49
Difference of Longitude in Time between Pulo Panjong and Natal.....	0	1	9,95

Difference of Longitude between Pulo Panjong and Natal. (*L.*)

Chronometer 397.

	h.	'	"	h.	'	"
By 1st Set of Observations	0	1	04,2			
2d „	0	0	59,4			
Mean..				0	1	01,8

Chronometer 391.

By 1st Set of Observations	0	0	16			
2d „	0	1	23			
Mean..				0	0	49,5

Chronometer Earnshaw.

By 1st Set of Observations	0	0	52,55			
2d „	0	1	22			
Mean..				0	1	07,3
Mean..				0	0	59,5

Difference of Longitude between Pulo Panjong and Natal. (*R.*)

Chronometer 391.

	h.	'	"	h.	'	"
By 1st Set of Observations	0	0	40,81			
2d „	0	0	40,55			
Mean..				0	0	40,68

Chronometer 397.

	h.	'	"	h.	'	"
By 1st Set of Observations	0	0	51,98			
2d „	0	0	51,15			
Mean..				0	0	51,56
Mean..				0	0	46,12

At Natal Hill.

For the Time, and Longitude.

1822 Month.	Time by Chronometer 397 Forenoon.	Altitude of the Sun corrected for Error, Refraction, &c.	Sun's Declination.	Latitude.	Apparent Time.	Equation of Time.	Mean Time.	Chronometers Slow or Fast by Mean Time.
								397 Slow.
	h. ' "	° ' "	h. ' "	° ' "	h. ' "	' "	h. ' "	h. ' "
Oct. 10	7 47 40,2	46 58 48,5	6 24 00 s	0 24 49 N	9 09 52,1	12 44,4	8 57 07,7	1 09 27,5

Difference of Longitude between Pulo Panjong and Natal Hill.

Chronometer 397.

	h.	′	″
October 10, Chronometer Slow for Mean Time at Natal Hill.....	1	09	27,5
October 19, Chronometer Slow for Mean Time at Pulo Panjong.....	1	09	51,9
Difference....	0	00	24,4
Mean Rate of Chronometer at Pulo Panjong in an interval of 9 days.....			17,7
Difference of Longitude in time between Pulo Panjong and Natal Hill.....	0	00	42,1

At AYER BONGHY (Near the Flag Staff.)

For the Time, and Longitude.

1822 Month.	Time by Chronometer 397 Afternoon.	Altitude of the Sun corrected for Error, Refraction, &c.	Sun's Declination.	Latitude.	Apparent Time.	Equation of Time.	Mean Time.	Chronometer Slow or Fast by Mean Time. 397 Slow.
	h. ′ ″	° ′ ″	° ′ ″	° ′ ″	h. ′ ″	′ ″	h. ′ ″	h. ′ ″
Oct. 16	1 36 51,5	43 58 45	8 44 33 S	0 11 42 N	3 01 18,4	14 13,4	2 47 05,0	1 10 13,5

Difference of Longitude between Pulo Panjong and Ayer Bonghy.

Chronometer 397.

	h.	′	″
Oct. 16, Chronometer Slow for Mean Time at Ayer Bonghy.....	1	10	13,5
Oct. 16, Chronometer Slow for Mean Time at Pulo Panjong.....	1	09	59,4
Difference of Longitude in Time between Pulo Panjong and Ayer Bonghy.....	0	00	14,1

Latitude of Pulo Pinnee.

By the Stars.

1822 Month.	Stars Observed.	Meridian Altitude.	Refraction.	Mean Declination.	True Meridian Altitude.	Zenith Distance.	True Declination.	Latitude North.
		° ′ ″	′ ″	° ′ ″	° ′ ″	° ″ ″	° ′ ″	° ′ ″
Dec. 12	Achernar	31 48 12 S	1 31,8	58 08 18,7 S	31 46 40,4 S	58 13 19,6 N	58 08 18,7 S	0 05 00,9
	β Persei	49 49 42 N	0 48,2	40 16 06,1 N	49 48 53,8 N	40 11 06,2 S	40 16 06,1 N	0 04 59,9
18	Achernar	31 48 12,5 S	1 31,8	58 08 18,4 S	31 46 40,7 S	58 13 19,3 N	58 08 18,4 S	0 05 00,9
	α Arietis	67 28 05 N	0 23,5	*	67 27 41,5 N	22 32 18,5 S	22 37 31,4 N	0 05 12,9
19	Achernar	31 48 17,5 S	1 31,8	58 08 18,4 S	31 46 45,7 S	58 13 14,3 N	58 08 18,4 S	0 04 55,9
	α Persei	40 53 07,5 N	1 06,2	49 13 21,9 N	40 52 01,3 N	49 07 58,7 S	49 13 21,9 N	0 05 23,2

Latitude.—By the Sun.

1822 Month.	Sun Observed.	Meridian Altitude.	Refraction.	Parallax.	Sun's semi Diameter.	True Meridian Altitude of Sun's Centre.	Zenith Distance.	Declination.	Latitude North.
		° ′ ″	′ − ″	′ + ″	′ + ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
Dec. 15	Sun's L. L....	66 23 51 S	0 24,6	0 03,7	16 17,1	66 39 47,2 S	23 20 12,8 N	23 15 53,8 S	0 04 19,0
19	Sun's L. L....	66 14 02,5	0 24,8	0 03,8	16 17,4	66 29 59,9	23 30 00,1	23 25 31,6	0 04 28,5

Results of the Observations

For the Latitude of Pulo Pinnee.

By the Northern Stars.	° ′ ″	*By the Southern Stars.*	° ′ ″
β Persei	0 04 59,9 N	Achernar	0 05 00,9 N
α Arietis	0 05 12,9		0 05 00,9
α Persei	0 05 23,2		0 04 55,9
		Sun	0 04 19,0
			0 04 28,5
Mean	0 05 12,0 N	Mean	0 04 45,0 N

Latitude of Pulo Pinnee by the Northern Stars.....	0 05 12,0 N
do de by the Southern Stars....	0 04 45,0
Mean....	0 04 58,5 N

Results of the Observations

At Pulo Pinnee

For the True Bearing of Pulo Gaunsah Lout, and the Variation of the Compass.

Month.	Apparent Time.	Horary Angle.	Dist. Sun's So. Limb & Gaunsah Lout, corrected for Error and S. Diam.	Azimuth.	Horizontal Arc.	True Bearing.	Magnetic Bearing. c	Variation of the Compass. c
	h. ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
Dec. 19	5 55 15	88 48 45	124 16 42	66 34 56	55 42 33	57 42 31 SE	59 09 0	1 26 29
20	5 57 10	89 17 30	124 04 57	66 33 44	55 54 39	57 31 37	59 09	1 37 23
					Mean....	57 37 04 SE		1 31 56 E

RESULTS of the OBSERVATIONS.

At Pulo Pinnee.

For the Time, Longitude and Rates of the Chronometers. (L.)

1822 Month.	Times by Chronometer Earnshaw. Forenoon.	Afternoon.	Mean.	Equation to equal Altitudes.	Apparent Noon by Chronometer Earnshaw.	Equation of Time.	Mean Noon by Chronometer Earnshaw.	Chronometers Slow or Fast by Mean Time. Earnshaw Slow	391 Slow.	Rate per Day. Earnshaw	391.
	h. ′ ″	*h.* ′ ″	*h.* ′ ″	″	*h.* ′ ″	″	*h.* ′ ″	*h.* ′ ″	*h.* ′ ″	″	″
Dec. 14	9 04 43,8	1 27 43,2	11 16 13,5	+ 1,1	11 16 14,4	+ 5 18,1	11 21 32,5	0 38 27,5	2 09 36,5		
15	9 05 39,9	1 28 18,6	11 16 59,2	0,9	11 17 00,1	4 49,1	11 21 49,2	0 38 10,8	2 09 44,8	+ 16,7	— 08,3
	Chronometer 391.				*Chronometer* 391		*Chronometer* 391			11,9	15,1
19	7 51 19,8	11 51 26,7	9 46 23,2	0,4	9 46 23,6	2 51,1	9 49 14,7	0 37 23,3	2 10 45,3		
20	7 35 54 9	11 57 29,4	9 46 42,1	0,2	9 46 42,3	2 21,2	9 49 03,5	0 37 09,5	2 10 56,5	13,8	11,2

Observations

For the Time *and* Longitude *of* Pulo Pinnee. (*R.*)

1822 Month.	Mean Times per Chronometer 397.	Altitudes Corrected for Error of Sextant.	Refraction.	Parallax.	True Altitude of the Sun's Centre.	Sun's Declination.	Apparent Time.	Equation of Time.	Mean Time.	Chronometers Slow or Fast for Mean Time. 397. Slow.	391.	Earnshaw. Slow.	Rate per Day. 397.	391.	Earnshaw
	h. ′ ″	° ′ ″	″	+ ″	° ′ ″	° ′ ″	*h.* ′ ″	′ ″	*h.* ′ ″	*h.* ′ ″	*h.* ′ ″	*h.* ′ ″	″	″	″
Dec. 9	1 00 19	49 59 37,25	48	6	49 58 55,25	22 48 4,7	2 15 5,21	— 7 35,19	2 7 30,02	1 7 11,02	2 8 45,02	0 39 44,77			
10	By Equal Altitudes.....								*Noon.*	1 7 9,08	2 8 54,08	0 39 30,08	+ 2,12	— 8,87	+ 14,88
,,	19 59 44 *Earnshaw.*	43 29 37,5	60	6,5	43 28 44	22 58 10,1	21 13 36,69	— 6 46,27	26 6 50,42	1 7 6,42	—	—	3,02	—	—
11	20 16 34,5	40 59 37,5	65	6,75	40 58 39,25	23 3 8,8	21 1 58,4	6 18,7	20 55 39,7	—	—	0 39 5,2			
13	2 22 44,16	38 59 37,5	70	7,1	38 58 34,6	23 8 47,5	3 7 13,8	5 43,2	3 1 30,6	—	—	0 38 46,44	—	—	14,96
14	1 47 44,3	46 29 37,1	54	6,5	46 28 49,6	23 12 41,6	2 31 26,6	5 15,2	2 26 11,4	—	—	0 38 27,1	—	—	19,83
,,	20 38 18,75	44 59 37,5	57	6,5	44 58 47	23 15 29,5	21 21 22,3	4 22,5	21 16 29,8	—	—	0 38 11,05	—	—	20,45
18	20 58 37,5	48 29 26	50	6,2	48 28 42,2	23 25 17,8	21 38 55,1	2 55,63	21 35 59,47	—	—	0 37 21,97	—	—	16,28
19	20 56 54.	47 59 26	51	6,2	47 58 41,2	23 26 39,7	21 36 28,7	2 24,28	21 34 4,42	—	—	0 37 10,42	—	—	11,55
20	21 5 8,5	49 29 27,5	48,5	6,1	49 28 45,1	23 27 28,9	21 44 3.2	1 54,1	21 42 9,1	—	—	0 37 00,6	—	—	9,77

For the Longitude of Pulo Pinnee.

Chronometer 391 *at Pulo Panjong.*

	h.	′	″
November 17, Mean Noon at Pulo Panjong Chronometer Slow.....	2	06	08,9

Chronometer Earnshaw.

November 17, Mean Noon at Pulo Panjong Chronometer Slow.....	0	46	08,9

Rate of the Chronometers at Pulo Panjong.

1822 Month.	Rate of Chronometers. 391	Earnshaw.	Remarks.
	″	″	
November 12			
13	— 10,4	+ 17,1	
14	14,2	08,8	
16	21,4	25,6	2 days.
17	09,0	10	
	11,0	12,3	Mean

Chronometer 391.

	h.	′	″
December 14, Mean Noon at Pulo Pinnee Chronometer Slow.....	2	09	36,5
15, ″ at ″ ″	2	09	44,8
19, ″ at ″ ″	2	10	45,3

Chronometer Earnshaw.

December 14, Mean Noon at Pulo Pinnee Chronometer Slow.....	0	38	27,5
15, ″ at ″ ″ ″	0	38	10,8
19, ″ at ″ ″ ″	0	37	23,3

Rate of the Chronometers at Pulo Pinnee.

1822 Month.	Rate of Chronometers. 391.	Earnshaw.	Remarks.
	″	″	
December 14			
15	— 08,3	+ 16,7	
19	60,5	47,5	
20	11,2	13,8	
	13,3	13,0	Mean at Pulo Pinnee.
	11,0	12,3	Mean at Pulo Panjong.
	12,15	12,65	Mean Rate.

At South East Point of Pulo Pinnee.

Difference of Longitude from Natal.

Chronometer 391.

			h.	′	″
December	9,	Mean Noon at Pulo Pinnee Chronometer Slow.....	2	8	45,21
	10,	,, at ,, ,, ...	2	8	54,08

Chronometer 397.

December	9,	Mean Noon at Pulo Pinnee Chronometer Slow.....	1	7	11,21
	10,	,, at ,, ,, ,, ...	1	7	9,08
	11,	,, at ,, ,, ,, ...	1	7	6,06

Chronometer Earnshaw.

December	9,	Mean Noon at Pulo Pinnee Chronometer Slow.....	0	39	44,96
	10,	,, at ,, ,, ...	0	39	30,08

Rate of the Chronometers at Pulo Pinnee.

1822	Rate of Chronometers.			Remarks.
Month.	391.	397.	Earnshaw.	
	″	″	″	
Dec. 9 to the 10	— 8,87	+ 2,12	+ 14,88	
11	8,87	3,02	14,88	
	8,87	5,14	14,88	At Pulo Pinnee.
	56,9	0,97	57,30	Sum.
	6 (65,77	7 (6,11	6 (72,18	
Mean Rate.	10,96	+ 0,87	12,03	From Natal to Pulo Pinnee.

Difference of Longitude between Pulo Panjong and Pulo Pinnee. (L.)

Chronometer 391.

			h.	′	″
1822.	November 17,	Chronometer Slow for Mean Time at Pulo Panjong.....	2	06	08,9
	December 14,	Chronometer Slow for Mean Time at Pulo Pinnee.....	2	09	36,5
		Difference....	0	03	27,6
Mean Rate of Chronometer at Pulo Panjong and Pulo Pinnee in an interval of 27 days..			0	05	28,65
Difference of Longitude in Time between Pulo Panjong and Pulo Pinnee.....			0	02	00,45

November	17,	Chronometer Slow for Mean Time at Pulo Panjong.....	2	06	08,9
December	15,	Chronometer Slow for Mean Time at Pulo Pinnee	2	09	44,8
		Difference....	0	03	35,9
Mean Rate of Chronometer at Pulo Panjong and Pulo Pinnee in an interval of 28 days..			0	05	40,2
Difference of Longitude in Time between Pulo Panjong and Pulo Pinnee.....			0	02	04,3

	h.	'	"
November 17, Chronometer Slow for Mean Time at Pulo Panjong	2	06	08,9
December 19, Chronometer Slow for Mean Time at Pulo Pinnee	2	10	45,3
Difference....	0	04	36,4
Mean Rate of Chronometer at Pulo Panjong and Pulo Pinnee in an interval of 32 days..	0	06	28,8
Difference of Longitude in Time between Pulo Panjong and Pulo Pinnee.....	0	01	52,4

Chronometer Earnshaw.

November 17, Chronometer Slow for Mean Time at Pulo Panjong.....	0	46	08,9
December 14, Chronometer Slow for Mean Time at Pulo Pinnee.....	0	38	27,5
Difference....	0	07	41,4
Mean Rate of Chronometer at Pulo Panjong and Pulo Pinnee in an interval of 27 days..	0	05	41,55
Difference of Longitude in Time between Pulo Panjong and Pulo Pinnee.....	0	01	59,85

November 17, Chronometer Slow for Mean Time at Pulo Panjong.....	0	46	08,9
December 15, Chronometer Slow for Mean Time at Pulo Pinnee.....	0	38	10,8
Difference....	0	07	58,1
Mean Rate of Chronometer at Pulo Panjong and Pulo Pinnee in an interval of 28 days..	0	01	54,2
Difference of Longitude in Time between Pulo Panjong and Pulo Pinnee	0	02	03,9

November 17, Chronometer Slow for Mean Time at Pulo Panjong.....	0	46	08,9
December 19, Chronometer Slow for Mean Time at Pulo Pinnee.....	0	37	23,3
Difference....	0	08	45,6
Mean Rate of Chronometer at Pulo Panjong and Pulo Pinnee in an interval of 32 days..	0	06	44 8
Difference of Longitude in Time between Pulo Panjong and Pulo Pinnee.....	0	02	00,8

Difference of Longitude from Natal. (R.)

Chronometer 391.

	h.	'	"
1822. Dec. 9, Chronometer Slow for Mean Time at Pulo Pinnee.....	2	8	45,21
Dec. 3, Chronometer Slow for Mean Time at Natal.....	2	8	31,24
Difference....	0	0	13,97
Mean Rate of Chronometer at Natal and Pulo Pinnee in an interval of 6 days.....	0	1	5,76
Difference of Longitude in Time between Natal and Pulo Pinnee.....	0	0	51.79

December 10, Chronometer Slow for Mean Time at Pulo Pinnee.....	2	8	54,08
December 3, Chronometer Slow for Mean Time at Natal.....	2	8	31,24
Difference....	0	0	22,84
Mean Rate of Chronometer at Natal and Pulo Pinnee in an interval of 7 days.....	0	1	16,72
Difference of Longitude in Time between Natal and Pulo Pinnee.....	0	0	53,88

Chronometer 397.

	h.	'	"
December 9, Chronometer Slow for Mean Time at Pulo Pinnee	1	7	11,21
December 3, Chronometer Slow for Mean Time at Natal	1	8	13,24
Difference	0	1	2,03
Mean Rate of Chronometer at Natal and Pulo Pinnee in an interval of 6 days	0	0	5,22
Difference of Longitude in Time between Natal and Pulo Pinnee	0	0	56,81

December 10, Chronometer Slow for Mean Time at Pulo Pinnee	1	7	9,08
December 3, Chronometer Slow for Mean Time at Natal	1	8	13,24
Difference	0	1	4,16
Mean Rate of Chronometer at Natal and Pulo Pinnee in an interval of 7 days	0	0	6,09
Difference of Longitude in Time between Natal and Pulo Pinnee	0	0	58,07

Dec. 28, Chronometer Slow for Mean Time at Pulo Pinnee	1	7	6,06
Dec. 3, Chronometer Slow for Mean Time at Natal	1	8	13,24
Difference	0	1	7,18
Mean Rate of Chronometer at Natal and Pulo Pinnee in an interval of 8 days	0	0	6,96
Difference of Longitude in Time between Natal and Pulo Pinnee	0	1	0,22

Chronometer Earnshaw.

Dec. 9, Chronometer Slow for Mean Time at Pulo Pinnee	0	39	44,96
Dec. 3, Chronometer Slow for Mean Time at Natal	0	41	55,24
Difference	0	2	10,28
Mean Rate of Chronometer at Natal and Pulo Pinnee in an interval of 6 days	0	1	12,18
Difference of Longitude in Time between Natal and Pulo Pinnee	0	0	58,1
Dec. 10, Chronometer Slow for Mean Tim at Pulo Pinnee	0	39	30,08
Dec. 3, Chronometer Slow for Mean Time at Natal	0	41	55,24
Difference	0	2	25,16
Mean Rate of the Chronometer at Natal and Pulo Pinnee in an interval of 8 days	0	1	24,21
Difference of Longitude in Time between Pulo Panjong and Pulo Telloor	0	1	00,95

Difference of Longitude between Pulo Panjong and Pulo Pinnee. (*L.*)

Chronometer 391.

	h.	'	"			
By 1st Set of Observations	0	02	00,45			
2d "	0	02	04,3			
3d "	0	01	52,4			
Mean..				0	1	59 05

Chronometer Earnshaw.

	h.	'	"			
By 1st Set of Observations	0	0	59,85			
2d "	0	02	03,9			
3d "	0	02	00,8			
Mean..				0	2	1,52
Mean..				0	2	0,285 West.

Difference of Longitude between Natal and Pulo Pinnee. (*R.*)

Chronometer 391.

	h.	'	"
By 1st Set of Observations	0	0	51,79
2d „	0	0	53,88
Mean..	0	0	52,83

Chronometer 397.

By 1st Set of Observations	0	0	56,81
2d „	0	0	58,07
3d „	0	1	0,22
Mean..	0	0	58,36

Chronometer Earnshaw.

By 1st Set of Observations	0	0	58,1
2d „	0	1	0,95
Mean..	0	0	59,52
Mean..	0	0	56,9

For the Longitude of Pulo Gaunsah Lout. (*L.*)

Chronometer Earnshaw.

	h.	'	"
December 20, Mean Noon at Pulo Pinnee Chronometer Slow.....	0	37	09,5

Rate of the Chronometers at Pulo Gaunsah Lout.

1822 Month.	Earnshaw.	Remarks.
	„	
December 24		
25	+ 13,3	
26	10,9	
27	15,9	
	13,37	Mean at Pulo Gaunsah Lout.
	13,0	Mean at Pulo Pinnee.
	13,185	Mean Rate.

Chronometer Earnshaw.

	h	'	"
December 24, Mean Noon at Pulo Gaunsah Lout Chronometer Slow.....	0	36	26,2
25, „ at „ „ „	0	36	12,9
26, „ at „ „ „	0	36	02,0

Difference of Longitude between Pulo Pinnee and Pulo Gaunsah Lout. (L.)

Chronometer Earnshaw.

	h.	′	″
Dec. 20, Chronometer Slow for Mean Time at Pulo Pinnee	0	37	09,5
Dec. 24, Chronometer Slow for Mean Time at Pulo Gaunsah Lout	0	36	26,2
Difference	0	0	43,3
Mean Rate of Chronometer at Pulo Pinnee and Pulo Gaunsah Lout in an interval of 4 days	0	0	52,74
Difference of Longitude in Time between Pulo Pinnee and Pulo Gaunsah Lout	0	0	09,44

Dec. 20, Chronometer Slow for Mean Time at Pulo Pinnee	0	37	09,5
Dec. 25, Chronometer Slow for Mean Time at Pulo Gaunsah Lout	0	36	12,9
Difference	0	0	56,6
Mean Rate of Chronometer at Pulo Pinnee and Pulo Gaunsah Lout in an interval of 5 days	0	1	05,93
Difference of Longitude in Time between Pulo Pinnee and Pulo Gaunsah Lout	0	0	09,33

Dec. 20, Chronometer Slow for Mean Time at Pulo Pinnee	0	37	09,5
Dec. 26, Chronometer Slow for Mean Time at Pulo Gaunsah Lout	0	36	02
Difference	0	1	07,5
Mean Rate of Chronometer at Pulo Pinnee and Pulo Gaunsah Lout in an interval of 6 days	0	1	19,11
Difference of Longitude in Time between Pulo Pinnee and Pulo Gaunsah Lout	0	0	11,61

Chronometer Earnshaw.

		h.	′	″
Difference of Longitude in Time	By 1st Set of Observations	0	0	09,44
2d ″		0	0	09,33
3d ″		0	0	11,61
	Mean..	0	0	10,13

Difference of Longitude between Pulo Pinnee and Pulo Gaunsah Lout. (R.)

Chronometer Earnshaw.

	h.	′	″
December 23, Mean Noon at Pulo Gaunsah Lout Chronometer Slow	0	36	33,41
24, ″ at ″ ″ ″	0	36	25,4
25, ″ at ″ ″ ″	0	36	14,32

1822 Month.	Rate of Chronometer.	Remarks.
	″	
Dec. 23 to 24	+ 8,45	
25	11,61	
	20,06	
	+ 10,03	At Pulo Gaunsah Lout.
	10,66	At Pulo Pinnee.
Mean Rate.	+ 10,34	Gaunsah Lout and Pulo Pinnee

Difference of Longitude from Pulo Pinnee. (R.)

Chronometer Earnshaw.

		h.	′	″
1822. December 23,	Chronometer Slow for Mean Time at Pulo Gaunsah Lout.....	0	36	33,41
December 21,	Chronometer Slow for Mean Time at Pulo Pinnee.....	0	37	00,55
	Difference....	0	0	27,14
Mean Rate of Chronometer at Pulo Pinnee and Pulo Gaunsah Lout in an interval of 2 days		0	0	26,68
Difference of Longitude in Time between Pulo Pinnee and Pulo Gaunsah Lout.....		0	0	6,46

December 24,	Chronometer Slow for Mean Time at Pulo Gaunsah Lout.....	0	36	25,4
December 21,	Chronometer Slow for Mean Time at Pulo Pinnee	0	37	00,55
	Difference....	0	0	35,15
Mean Rate of Chronometer at Pulo Pinnee and Pulo Gaunsah Lout in an interval of 3 days		0	0	31,02
Difference of Longitude in Time between Pulo Pinnee and Pulo Gaunsah Lout.....		0	0	4,13

December 25,	Chronometer Slow for Mean Time at Pulo Gaunsah Lout.....	0	36	14,32
December 21,	Chronometer Slow for Mean Time at Pulo Pinnee.....	0	37	00,55
	Difference....	0	0	46,23
Mean Rate of Chronometer at Pulo Pinnee and Pulo Gaunsah Lout in an interval of 4 days		0	0	41,36
Difference of Longitude in Time between Pulo Pinnee and Gaunsah Lout.....		0	0	4,87

Difference of Longitude between Pulo Pinnee and Pulo Gaunsah Lout.

Chronometer Earnshaw.

	h.	′	″			
By 1st Set of Observations	0	0	6,46			
2d ,, ...	0	0	4,13			
3d ,, ...	0	0	4,87			
				Mean..	0	0	5,15

OBSERVATIONS AT PADANG.

For the TIME, and LONGITUDE.

1823 Month.	Time per Chronometer 391	Double Altitude of the Sun.	Error of Sextant.	Refraction.	Parallax.	Sun's corrected Altitude.	Sun's Declination.	Apparent Time.	Equation of Time.	Mean Time.	Chronometer Slow or Fast for Mean Time.
	h. ′ ″	° ′	″	′ ″	″	° ′ ″	° ′ ″	h. ′ ″	′ ″	h. ′ ″	h. ′ ″
Apr. 4	11 1 14	73 0 L. L									
	3 24,5	73 0 U. L									*Slow.*
	5 14,25	71 0 L. L	+1,67	−1 19,5	7,5	35 28 47,8	5 49 35,2 N	3 36 42,48	+2 56,77	3 39 39,25	4 33 18,63
	7 25	71 0 U. L									
	9 16	69 0 L. L									
	11 30	69 0 U. L									

*DIFFERENCE of LONGITUDE between NATAL and PADANG.**

	h.	′	h.	′	″
1823. March 28, Chronometer 391, Slow for Mean Time at	21	33	at Natal.....	4	26 39
April 4, Chronometer 391, Slow for Mean Time at	3	39	at Padang.....	4	33 18,63
			Difference....	0	6 39,63
Mean Rate of Chronometer at Natal and Padang (at 13,26′ † Losing per day) in an interval of 6 days, 6 hours, 6 minutes.....				—	1 22,93
Difference of Longitude in Time between Natal and Padang.....				0	5 16,7
Difference of Longitude in Degrees between Natal and Padang.....				1	19 10,5 E.

OBSERVATIONS AT PULO OUR

For the TIME, and LONGITUDE.

1823 Month.	Time per Chronometer 391.	Double Altitude of the Sun.	Error of Sextant.	Refraction.	Parallax.	Sun's corrected Altitude.	Sun's Declination.	Apparent Time.	Equation of Time.	Mean Time.	Chronometer Slow or Fat for Mean Time
	h. ′ ″	° ′	″	′ ″	″	° ′ ″	° ′ ″	h. ′ ″	′ ″	h. ′ ″	h. ′ ″
Apr. 6	16 32 48	92 0 U. L									
	34 58	92 0 L. L									*Slow.*
	36 50,75	94 0 U. L	+ 10,83	−0,53	+7,2	46 59 19,6	6 28 53,8 N	21 11 6,65	+2 26,26	21 13 32,91	4 35 35,45
	39 3	94 0 L. L									
	40 56,5	96 0 U. L									
	43 8,5	96 0 L. L									

DIFFERENCE of LONGITUDE between NATAL and PULO OUR.

	h.	′	h.	′	″
1823. March 28, Chronometer 391, Slow for Mean Time at	21	33	at Natal.....	4	26 39
April 6, Chronometer 391, Slow for Mean Time at	21	13	at Pulo Our.....	4	35 35,45
			Difference....	0	8 56,45
Mean Rate of Chronometer at Natal and Pulo Our (13,26′ Loss per day) in an interval of 8 days, 23 hours, 40 minutes.....				—	1 59,16
Difference of Longitude in time between Natal and Pulo Our.....				0	6 57,29
Difference of Longitude in Degrees between Natal and Pulo Our.....				1	44 19,35 E

* Within a few yards of the Protestant Church.

† Rate ascertained by Observations at Pulo Gaunsah Lout and Bencoolen on our return to that place.

Results. (*L.*)

Madras Observatory and Bencoolen.

				h.	′	″
Chronometer 391.	Going to Bencoolen,	*Lawrence*	....	1	27	59,65
,, 397.	,,	,,	....	1	28	04,52
,, Earnshaw	,,	,,	....	1	26	52,17
,, 391.	,,	*Robinson*	....	1	28	01,63
,, 397.	,,	,,	....	1	27	54,85
,, 391.	Returning from Bencoolen	,,	....	1	27	12,86
,, Earnshaw	,,	,,	....	1	28	07,42
			Mean....	1	27	45,3

But we may very fairly reject any Results which differ more than 40 of time or 10 of a degree from this Mean—Upon examination we find only the third result by Earnshaw thus differing, and rejecting that—

				h.	′	″	
The mean will be	....			1	27	53,49	
or	....	Degrees		21	58	20	East.
Longitude of Madras Observatory	....			80	17	21	
Longitude of Bencoolen by Chronometers	....			102	15	41	East.

Bencoolen and Tappanooly.

				h.	′	″
Chronometer 391.	going to Tappanooly	*Lawrence*	....	0	11	49,9
,, 397.	,,	,,	....	0	14	57,33
,, Earnshaw	,,	,,	....	0	13	37,87
			Mean....	0	13	28,33

But 391 differing so much from the others we shall reject the result by it, and take the mean of the remaining two results;

				h.	′	″	
This is	....			0	14	17,6	
or	....	Degrees		3	34	24	West
Longitude of Bencoolen	....			102	15	41	East.
Longitude of Tappanooly by Chronometers	....			98	41	17	East.

Tappanooly and Pulo Panjong.

				h.	′	″
Chronometer 391.	Going to Pulo Panjong	*Lawrence*	....	0	02	31,51
,, 397.	,,	,,	....	0	02	15,54
			Mean....	0	02	23,52
			or Degrees..	0	35	53,0 E.
Longitude of Tappanooly	....			98	41	17,0
Longitude of Pulo Panjong by Chronometers	....			99	17	10

Pulo Panjong and Pulo Pinnee.

				h.	′	″
Chronometer 391.	Going to Pulo Pinnee	*Lawrence*	....	0	01	59,05
,, Earnshaw	,,	,,	....	0	02	01,52
			Mean....	0	02	00,29 w

Pulo Panjong and Natal.

			h.	'	"	
Chronometer 391.	Going to Natal	*Lawrence*	0	0	16	
„ 397.	„	„	0	1	04,2	
„ Earnshaw	„	„	0	0	52,55	
„ 391.	Returning to Pulo Panjong	„	0	1	23	
„ 397.	„	„	0	0	59,4	
„ Earnshaw	„	„	0	1	22	
„ 391.	Going to Natal	*Robinson*	0	0	40,68	
„ 397.	„	„	0	0	51,56	
		Mean....	0	0	56,17	W
But rejecting the first result we shall have for the Mean			0	01	01,9	
or		Degrees..	0	15	29	W.
Longitude of Pulo Panjong			99	17	10	E
Longitude of Natal by Chronometers			99	01	41	

Natal and Pulo Pinnee.

			h.	'	"	
Chronometer 391.	Going to Pulo Pinnee	*Robinson*	0	0	52,83	
„ 397.	„	„	0	0	58,36	
„ Earnshaw	„	„	0	0	59,52	
		Mean..	0	0	56,9	
Pulo Panjong and Natal		*Robinson and Lawrence*	0	01	01,9	
„ and Pinnee		*Lawrence*	0	01	58,8	
„ and „		„	0	02	00,9	
		Mean....	0	01	59,55	W
		or Degrees....	0	29	53	W.
Longitude of Pulo Panjong			99	17	10	E.
Longitude of Pulo Pinnee by Chronometers			98	47	17	

Pulo Pinnee and Pulo Gaunsah Lout or Experiment Island.

				h.	'	"	
Chronometer	Earnshaw	Going to Pulo Gaunsah Lout	*Lawrence*	0	0	10,3	
„	„	„	*Robinson*	0	0	05,15	
			Mean....	0	00	07,73	W
			or Degrees..	0	01	56,0	
Longitude of Pulo Pinnee				98	47	17	
Longitude of Pulo Gaunsah *Lout* by Chronometers				98	49	13	

		h.	'	"	
Difference of Longitude between	Bencoolen and Tappanooly	0	14	17,6	W.
„	Tappanooly and Pulo Panjong	0	02	23,52	E.
„	Bencoolen and Pulo Panjong	0	11	54,08	W
„	Pulo Panjong and Pulo Pinnee	0	01	59,55	
„	Bencoolen and Pulo Pinnee	0	13	53,63	W
„	Pulo Pinnee and Pulo Gaunsah Lout	0	0	07,73	E.
„	Bencoolen *and Pulo* Gaunsah *Lout*	0	13	45,90	W
„	by the Eclipses of the Satellites of Jupiter* allowing Bencoolen to be in 102° 15' 44"	0	13	38,7	
	Mean....	0	13	42,3	
	or Degrees..	3	25	34,5	W.

* Vide next Page.

RESULTS OF THE ECLIPSES OF THE SATELLITES OF JUPITER.

1822 Month.	Place of Observation.	Observer.	Satellite.	Immersion or Emersion.	Times per Chronometer.	Chronometer Slow or Fast for Mean Time.	Mean Time of Observation at Place.	Mean Time at Greenwich.	Longitude in Time.	Error of Tables by comparisons with Observation taken at the Madras Observatory.	Longitude corrected for Error of Tables.	Difference of Longitude.	Longitude reduced to Pulo Gaunsah Lout.
					h. ′ ″	*h.* ′ ″	*h.* ′ ″	*h.* ′ ″	*h.* ′ ″	′ ″	*h.* ′ ″	′ ″	*h.* ′ ″
Sept. 8	Tappanooly.....	*L.*	1	Im.	13 47 33 397	1 08 21 *Slow.*	14 55 54	8 21 50	6 34 04	+ 0 11,6	6 34 15,6	+0 31,7	6 34 47,3
Dec 20	Pulo Pinnee.....	*R.*	1	Em.	8 02 32 *Earn.*	0 37 05,5 ,,	8 39 37,5	2 03 44	6 35 53,5	— 0 23,8	6 35 29,7	0 07,7	6 35 37,4
1823 Jan. 3	Pulo Gaunsah Lout..	*L.*	1	,,	11 55 30 ,,	0 33 52 ,,	12 29 22	5 54 14	6 35 08	0 24,7	6 34 43,3		6 34 43,3
9	,,	*L.*	1	,,	7 36 27 ,,	0 32 28,2 ,,	8 08 55,2	1 33 44	6 35 11,2	+ 0 23,8	6 35 35		6 35 35
9	,,	*R.*	1	,,	7 36 30 ,,	0 32 31,2 ,,	8 09 01,2	1 33 44	6 35 17,2	0 23,8	6 35 41,1		6 35 41,1
28	,,	*L.*	1	,,	6 46 58 ,,	0 27 22,5 ,,	7 14 20,5	0 38 43	6 35 37,5	— 0 22,9	6 35 14,6		6 35 14,6
28	,,	*R.*	1	,,	6 47 10 ,,	0 27 24,6 ,,	7 14 34,6	0 38 43	6 35 51,6	0 22,9	6 35 28,6		6 35 28,6
Feb. 17	,,	*L.*	2	,,	10 08 30 ,,	0 21 48 ,,	10 30 18	3 55 0	6 35 18	+ 0 09,9	6 35 27,9		6 35 27,9
20	,,	*L.*	1	,,	7 10 25 ,,	0 29 57,8 ,,	7 31 22,8	0 55 0	6 36 22,8	— 0 23	6 35 59,8		6 35 59,8
20	,,	*R.*	1	,,	7 10 30 ,,	0 20 57 ,,	7 31 27	0 55 0	6 36 27	0 23	6 36 04		6 36 04
Mar. 10	,,	*R.*	3	Im.	8 16 50 ,,	0 0 17,4 *Fast.*	8 16 32,6	1 41 39	6 34 53,6	0 09,1	6 34 44,5		6 34 44,5
10	,,	*L.*	3	,,	8 16 53 ,,	0 0 17,8 ,,	8 16 35,2	1 41 39	6 34 56,2	0 09,1	6 34 47,1		6 34 47,1
14	,,	*L.*	2	Em.	7 38 10 ,,	0 01 24 ,,	7 36 46	1 01 11	6 35 35	+ 0 20,3	6 35 55,3		6 35 55,3
												Mean....	6 35 23,53

Table of Latitudes and Longitudes, of some of the Remarkable Places on the West Coast of Sumatra, of Prominent Points on the Ranges of Mountains and of some of the Islands about the Equator:

Names of Places.	Latitude.	Longitude from Madras Observatory.	Longitude from Greenwich.	Remarks.
	° ′ ″	° ′ ″	° ′ ″	
Bencoolen.....	3 47 31 S.	21 58 23 E.	102 15 44 E.	Fort Marlbro' Turret
Rat Island.....	3 50 29	21 54 11	102 11 32	Station near the Wharf
Conspicuous Hill.....	3 23 33	22 04 02	102 21 23	Centre
Sugar Loaf Peak.....	3 34 31	22 09 45	102 27 06	
Lye Peak.....	3 14 48	21 57 42	102 15 03	
Lion's Rump.....	3 51 41	22 09 02	102 26 23	Centre
Mr. Presgrave's Garden..	3 47 51	21 58 10	102 15 31	Staff on a Tree
Hamilton's Tomb.....	3 48 34	21 59 43	102 17 04	Tomb
Argyle Hill.....	3 51 02	22 04 10	102 21 31	Mark
Tappanooly *Island*.....	1 43 47 N	18 23 56	98 41 17	Staff on the height
Sugar Loaf Peak (Island)	1 34 54	18 20 26	98 37 47	
Natal.....	0 33 26	18 44 20	99 01 41	Station N. E. of the Fort
Pulo Panjong.....	0 11 22	18 59 49	99 17 10	Station East of the Bungalow
Pulo Pahgango.....	0 10 22	18 57 23	99 14 44	Centre of the Island
Pulo Telloor.....	0 07 16	19 03 04	99 20 25	Station on the Island
Ayer Bonghy *Hill*.....	0 11 26	19 03 43	99 21 04	Mark
Lubwaun Hill.....	0 13 18	19 03 08	99 20 29	Bush
Geonum Allyee.....	0 13 21	19 04 23	99 21 44	Highest part of the Range
Mount Ophir.....	0 04 58	19 43 27	100 00 48	Remarkable Peak
High Peak on the Range	0 29 48	19 20 55	99 38 16	
Ayer Bonghy.....	0 11 42	19 03 44	99 21 05	Station North of the Staff
Pungalauren.....	0 12 47	18 54 39	99 11 51	Highest Peak
Pulo Pinnee.....	0 04 40	18 29 56	98 47 17	S. E point of the Island
Pulo Oolur.....	0 05 11	18 30 48	98 48 09	Centre of the Island
Nellang Hill.....	0 20 27	18 44 42	99 02 03	„ „ Peak
Oojong Tuan	0 14 59	18 45 28	99 02 49	Centre of the Hill
Lubwaun Looloo.....	0 14 05	18 47 04	99 04 25	Centre of the Hill
Toolechemanah.....	0 13 07	18 50 34	99 07 55	Highest part of the Hill
Pulo Gaunsah.....	0 02 55	18 32 48	98 50 09	Centre of the Island
Pulo Gaunsah Lout...	0 01 49	18 32 45,5	98 50 06,5	Pillar on the Island

Referring to the Extracts from *Sir Stamford Raffles's* Letter before given, we find, only the Geographical Situation of Bencoolen, and that of two or three other Points to the Southward, are supposed to be correctly known—and even Bencoolen, according to the latest and best authorities, appears to be placed upwards of twelve miles more to the Eastward than it really is, supposing the Longitude here deduced to be correct—which there seems little reason to doubt. Proceeding to the Northward, we find Natal is considered to be in Longitude 98° 40' E., whereas according to the foregoing Deductions it is in Longitude 99° 1¾'—So that between Bencoolen and Natal, in a difference of Latitude of little more than 4 degrees, there appears to be an error in Longitude of about 34 minutes. Mount Ophir according to a Chart of Arrowsmith's published ten or eleven years ago, is placed in about Longitude 100° 12, which is more than 11 miles too far to the Eastward. Natal is in 99° 24, or 44 East of the authorities before alluded to, and about 22 miles East of the Longitude deduced from the Observations given in this Report.

From all which it will appear, I imagine, that the Geographical Situations here deduced, are of considerable Value; and as was intended, will furnish Points of Departure for a Survey of the Coast and Islands, as well as for Navigators—who with good Chronometers on board, may do much towards filling up, with accuracy, between the Points now given—the greatest difficulty being to establish a Position to take a departure from---Bencoolen and Mount Ophir are two excellent Points—the other Principal Places here given, are not much inferior—Pulo Gaunsah Lout, if Navigators could discover it, would also be among the best Places for taking a departure from---its Position being also so well laid down.

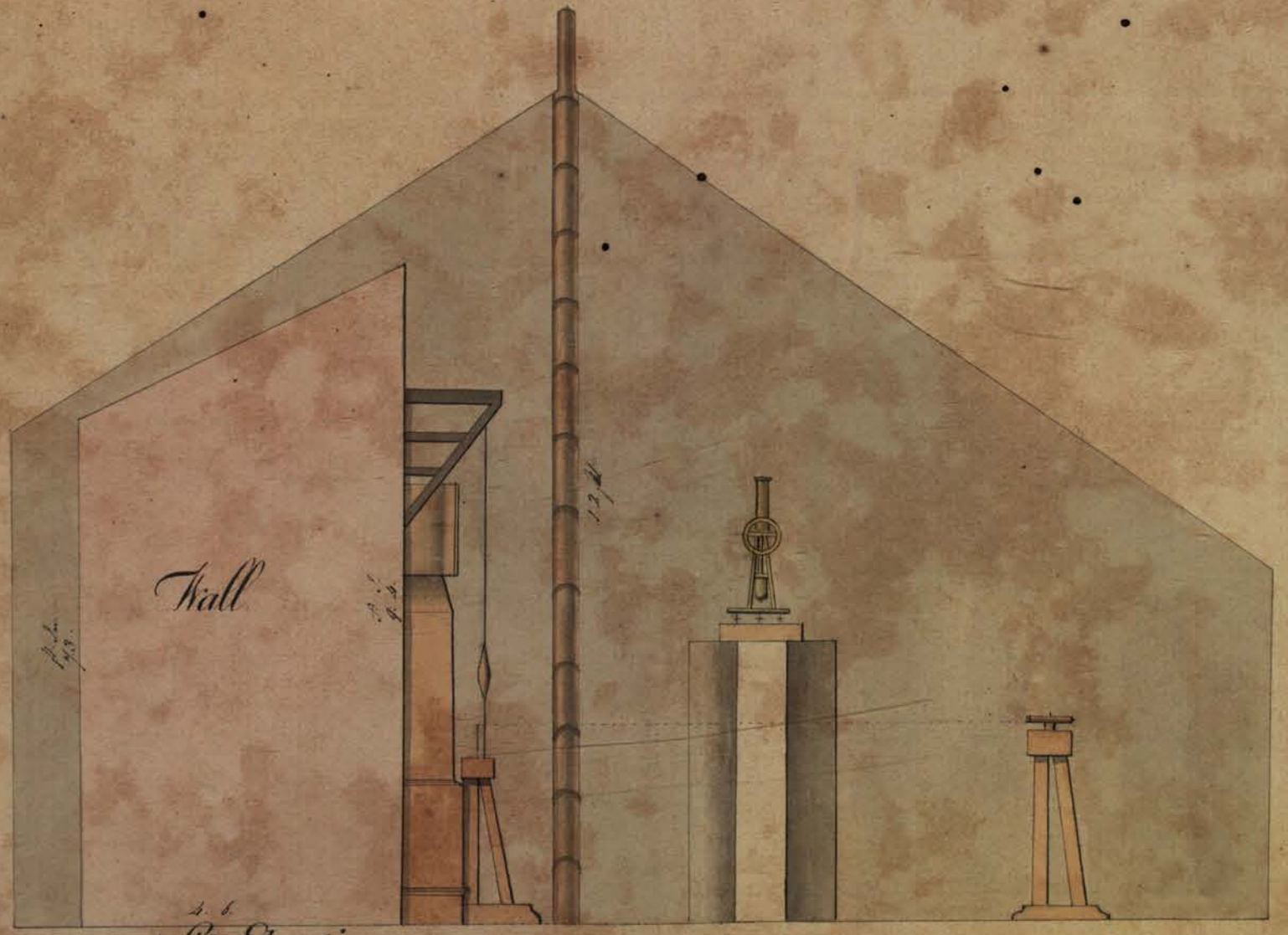
Madras Observatory.

J. Goldingham
Assistant

No I.
Pulo Rengin
Ayer Bongy
Pt. Ayer Bongy
Pasaman
Mount Ophir
EQUATOR
Pulo Batooa
Pulo Sacka
Massang
Sketch
of PART of the WEST COAST of
SUMATRA
and Adjacent Islands near the
EQUATOR
as given in some of the Charts.
Pereaman
Padang
Scale of Miles.
10. 5. 0. 10. 20. 30. 40

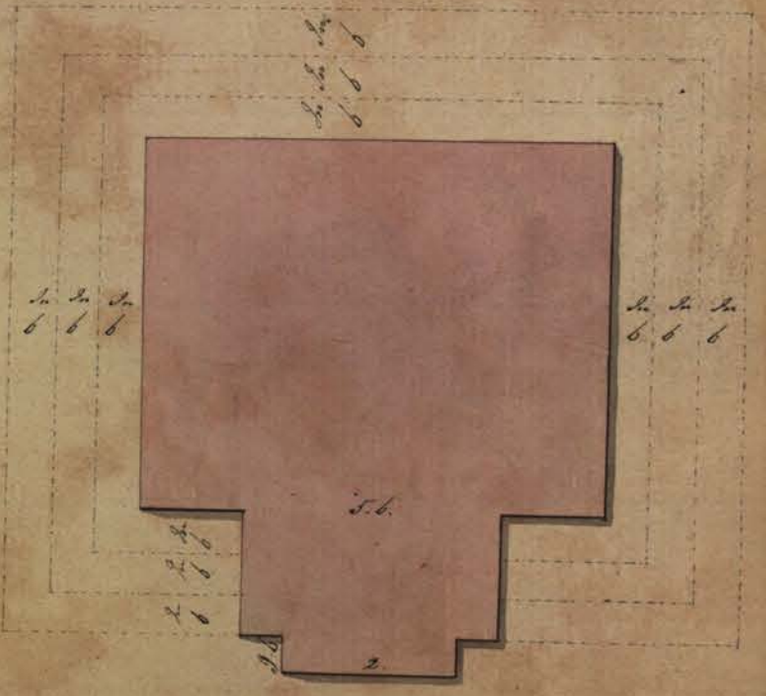
Canvas Observatory

№ 2



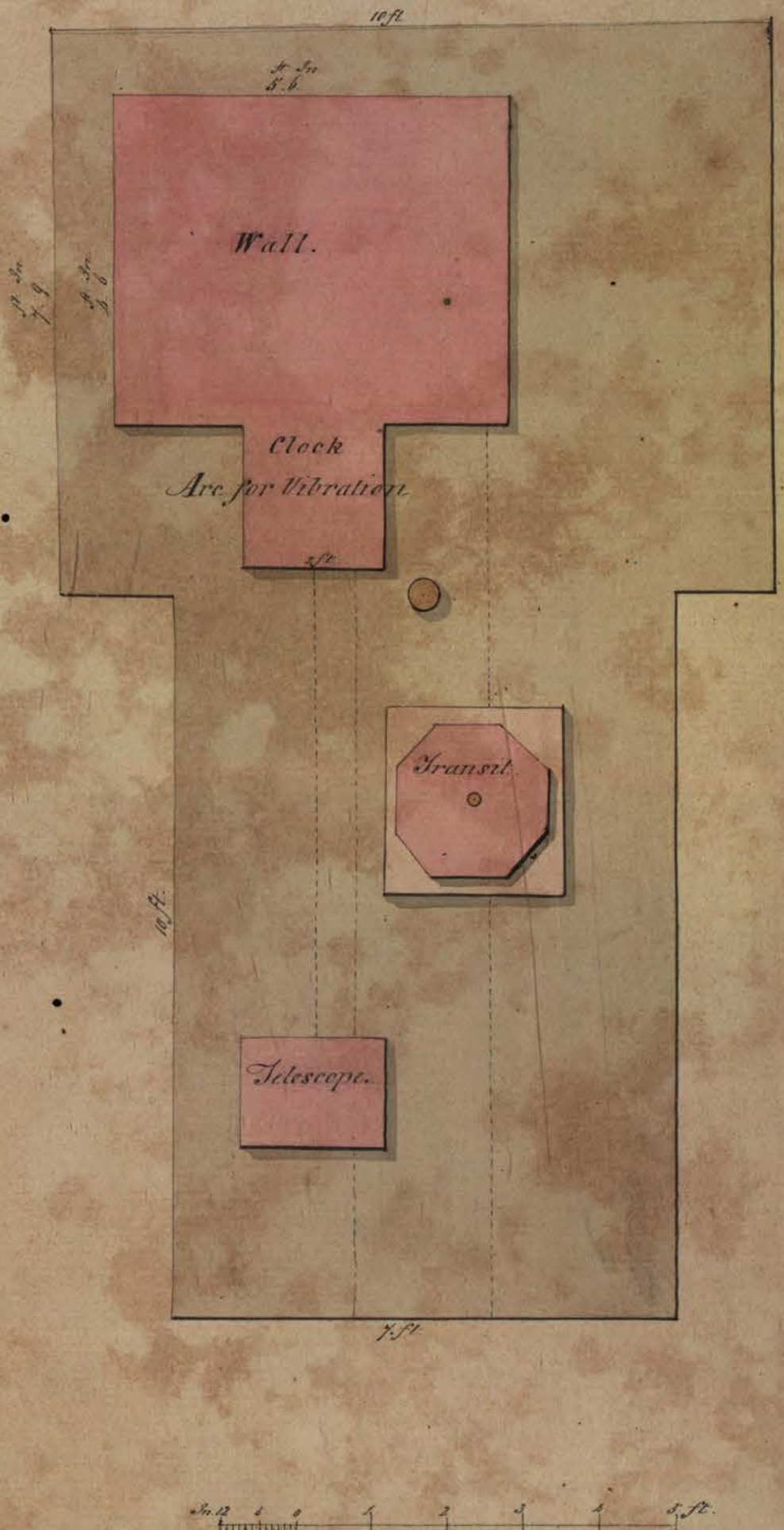
Side Elevation

Plan of the Wall

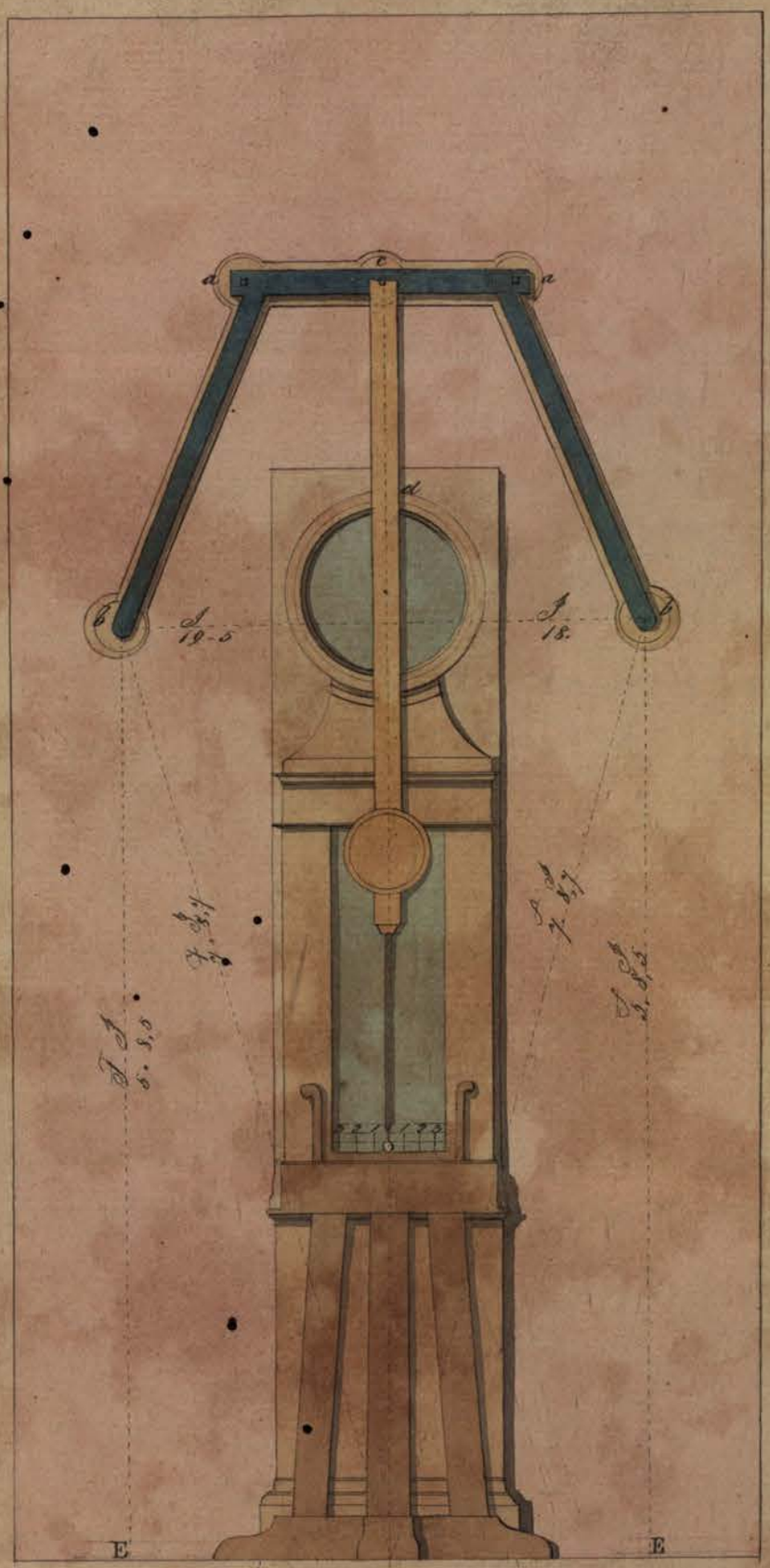


CVe 3.

Plan
of the
Observatory.



N°4.

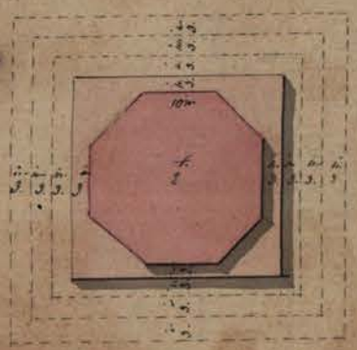


Front Elevation of the Wall with the Clock and Frame for supporting the Pendulum of Experiment

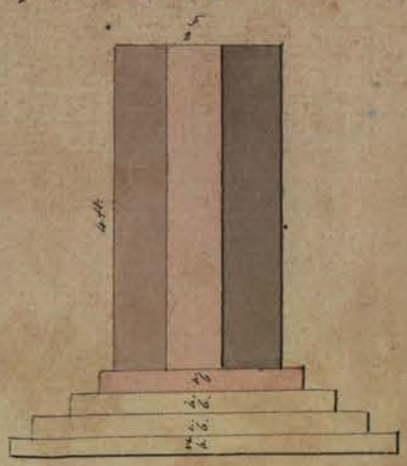
The measures those when the Apparatus was up at the Madras Observatory

No. 6.

Plan



Pillar
for the Transet Instrument



Foundation for the Support of the small Telescope

No. 5

Plank for the Clock

Dimensions

Length	5 ft 7
Breadth	1 . 4
Heighth	0 . 2¼

Screws marked with Letters are for fixing the Plank to the Wall

A to a, on the line	0 . 2
b,	0 . 6.5
c,	1 . 3,5
d,	2 . 3.
e,	3 . 7
f,	4 . 8
g,	5 . 4
h,	6 . 3.5
i	6 . 3.5.

Screw holes in the Clock Case marked with figures in these holes Screws are to be inserted for fixing the Case to the Plank.

A to 1 on the line	2 . 10.4
2	4 . 0.1
3	4 . 2.4
4	5 . 9
5	5 . 9.5
6	6 5

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